This document gives pertinent information concerning the reissuance of the VPDES Permit listed below. This permit is being processed as a Minor, Industrial permit. The discharge results from the operation of a water treatment plant and its associated operations. This permit action consists of updating the proposed effluent limits to reflect the current Virginia WQS (effective January 6, 2011), adding three outfalls, and updating permit language as appropriate. The effluent limitations and special conditions contained in this permit will maintain the Water Quality Standards of 9VAC25-260 et seq.

1.	Facility Name and Mailing Address:	Griffith Water Treatment Plant- Fairfax Water 9600 Ox Road Lorton, VA 22079	SIC Code :	4941 WTP
	Facility Location:	9600 Ox Road Lorton, VA 22079	Counties:	Fairfax and Prince William
	Facility Contact Name:	A-J Wangner	Telephone Number:	(703) 641-6633
	Contact Title:	Senior Plant Engineer		
	Facility E-mail Address:	awangner@fairfaxwater.org		
2.	Permit No.:	VA0002585	Expiration Date of previous permit:	August 16, 2015
	Other VPDES Permits associated with this facility:		None	
	Other Permits associated with this facility:		Hazardous Waste VAD981102379 Hazardous Waste VAR000512939 Hazardous Waste VAR000517391 Hazardous Waste VAR000515429	
	E2/E3/E4 Status:	Not Applicable (NA)		
3.	Owner Name:	Fairfax County Water Authority d/b/a Fairfax Water		
	Owner Mailing Address:	8570 Executive Park Avenue Fairfax, VA 22031-2218		
	Owner Contact:	Charles M. Murray	Telephone Number:	(703) 289-6011
	Owner Contact Title:	General Manager		
	Owner E-mail Address:	cmurray@fairfaxwater.org		
4.	Application Complete Date:	February 13, 2015		
	Permit Drafted By:	Alison Thompson	Date Drafted:	August 31, 2015
	Draft Permit Reviewed By:	Susan Mackert	Date Reviewed:	September 9. 2015
	Public Comment Period:	Start Date: November 3, 2015	End Date:	December 3, 2015

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5. Receiving Waters Information: See Attachment 1 for the Flow Frequency Determination

Outfall 001

Receiving Stream Name :	Occoquan River	Stream Code:	1aOCC
Drainage Area at Outfall:	Not Applicable - Tidal	River Mile:	7.03
Stream Basin:	Potomac	Subbasin:	Potomac
Section:	6	Stream Class:	II
Special Standards:	b, y	Waterbody ID:	VAN-A25E
7Q10 Low Flow:	Tidal	7Q10 High Flow:	Tidal
1Q10 Low Flow:	Tidal	1Q10 High Flow:	Tidal
30Q10 Low Flow:	Tidal	30Q10 High Flow:	Tidal
Harmonic Mean Flow:	Tidal	30Q5 Flow:	Tidal

Outfalls 002, 003, 004, 005, 006

Receiving Stream Name :	Occoquan River, UTs	Stream Code:	Various
Drainage Area at Outfall(s):	See Attachment 5	River Mile:	Various
Stream Basin:	Potomac	Subbasin:	Potomac
Section:	6	Stream Class:	III
Special Standards:	b	Waterbody ID:	VAN-A25E
7Q10 Low Flow:	0.0 MGD	7Q10 High Flow:	0.0 MGD
1Q10 Low Flow:	0.0 MGD	1Q10 High Flow:	0.0 MGD
30Q10 Low Flow:	0.0 MGD	30Q10 High Flow:	0.0 MGD
Harmonic Mean Flow:	0.0 MGD	30Q5 Flow:	0.0 MGD

Outfall 007

Receiving Stream Name :	Occoquan Reservoir	Stream Code:	1aOCC
Drainage Area at Outfall:	592 sq.mi.	River Mile:	7.97
Stream Basin:	Potomac	Subbasin:	Potomac
Section:	7	Stream Class:	III
Special Standards:	b	Waterbody ID:	VAN-A25L
7Q10 Low Flow:	*	7Q10 High Flow:	*
1Q10 Low Flow:	*	1Q10 High Flow:	*
30Q10 Low Flow:	*	30Q10 High Flow:	*
Harmonic Mean Flow:	*	30Q5 Flow:	*

*Lacustrine, therefore, there are no stream flows.

Outfall 008

Receiving Stream Name :	Occoquan Reservoir	Stream Code:	1aOCC
Drainage Area at Outfall:	592 sq.mi.	River Mile:	7.95
Stream Basin:	Potomac	Subbasin:	Potomac
Section:	7	Stream Class:	III
Special Standards:	b	Waterbody ID:	VAN-A25L
7Q10 Low Flow:	*	7Q10 High Flow:	*
1Q10 Low Flow:	*	1Q10 High Flow:	*
30Q10 Low Flow:	*	30Q10 High Flow:	*
Harmonic Mean Flow:	*	30Q5 Flow:	*

*Lacustrine, therefore, there are no stream flows.

Outfall 009

Receiving Stream Name :	Occoquan River	Stream Code:	1aOCC
Drainage Area at Outfall:	Not Applicable - Tidal	River Mile:	7.11
Stream Basin:	Potomac	Subbasin:	Potomac
Section:	6	Stream Class:	II
Special Standards:	b, y	Waterbody ID:	VAN-A25E
7Q10 Low Flow:	Tidal	7Q10 High Flow:	Tidal
1Q10 Low Flow:	Tidal	1Q10 High Flow:	Tidal
30Q10 Low Flow:	Tidal	30Q10 High Flow:	Tidal
Harmonic Mean Flow:	Tidal	30Q5 Flow:	Tidal

6. Statutory or Regulatory Basis for Special Conditions and Effluent Limitations:

X	State Water Control Law		EPA Guidelines
X	Clean Water Act	X	Water Quality Standards
X	VPDES Permit Regulation		Other
X	EPA NPDES Regulation		

7. Licensed Operator Requirements: Not Applicable to this industrial facility.

8. Reliability Class: Not Applicable to this industrial facility.

9. Permit Characterization:

	Private		Effluent Limited		Possible Interstate Effect
	Federal	X	Water Quality Limited		Compliance Schedule Required
	State	X	Whole Effluent Toxicity Program Required		Interim Limits in Permit
X	WTP		Pretreatment Program Required		Interim Limits in Other Document
X	TMDL	X	e-DMR Participant		

10. Wastewater Sources and Treatment Description:

This Water Treatment Plant (WTP) produces potable water for Fairfax County, and parts of Prince William County and is operated by Fairfax Water. Raw water from the Occoquan Reservoir flows to the Raw Water Pump Station and is pumped up the hill to the WTP.

Operation of the Old and New Lorton Facilities
The Old and New Lorton water treatment facilities as well as the Occoquan WTP (discharged under VPDES Permit VA0083755) were taken offline in 2006 when construction of the Griffith WTP was completed.

The new Griffith Water Treatment Facility
The new facility has separate basins for flocculation, sedimentation and filtration. The clarified water is then filtered using granular activated carbon capped multimedia filters. Filters are backwashed as necessary. The filtered water flows into the ozonation chamber, followed by chlorination with sodium hypochlorite, and is stored in one of the clearwells. The operators have the ability to add potassium permanganate, lime, fluoride, various polymers, and orthophosphate prior to the clearwells. Ammonia is added prior to distribution to keep a combined chlorine residual in the distribution system. In the spring, ammonia addition is halted to allow for the annual spring flushing of the system.

Outfall 001
Attachment 2 details all contributions to the quarry pit from the production of potable water. Included with the discharges associated with the production of the potable water are stormwater from the site around the Old and New Lorton buildings and intermittent contributions of sedimentation basin solids from the Corbalis WTP. The quarry pit is over 300 feet deep and has an estimated capacity of 0.68 billion gallons. The discharge pipe from the quarry was increased from 16 inches in diameter to 24 inches as part of the Griffith WTP project. The pipe's inlet is submerged several feet below the water surface. The pipe runs from the south edge of the quarry to the north bank of the Occoquan River, where the clarified supernatant discharges from the outlet of the pipe and cascades down a steep slope over rip rap to the river. Since the inlet is submerged, the discharge is continuous, even though the inflows to the quarry are intermittent in nature.

See Attachment 3 for the Industrial Rating Worksheet for Outfall 001.

Outfalls 002, 003, 004, 005, and 006
Stormwater is discharged from Outfalls 002, 003, 004, 005, and 006. Best management practices are utilized for these outfalls.

Outfall 007
With this reissuance, the permittee requested the addition of this outfall. In the application the permittee identified the outfall as High Dam #1 (HD1), but it shall be identified as Outfall 007 in the VPDES permit. This outfall receives the discharge from the raw water screen wash drain. This is a daily, intermittent discharge with a maximum flow rate of 0.006 MGD.

See Attachment 3 for the Industrial Rating Worksheet for Outfall 007.

Outfall 008
With this reissuance, the permittee requested the addition of this outfall. In the application the permittee identified the outfall as High Dam #2 (HD2), but it shall be identified as Outfall 008 in the VPDES permit. This outfall receives flows from the Total Organic Carbon (TOC) analyzer and raw water sample tap located at High Dam. The water from the reservoir is continuously tested for TOC. The maximum flow rate is 0.007 MGD.

See Attachment 3 for the Industrial Rating Worksheet for Outfall 008.

Outfall 009
With this reissuance, the permittee requested the addition of this outfall. In the application the permittee identified the outfall as Raw Water Pump Station #1 (RWPS1), but it shall be identified as Outfall 009 in the VPDES permit. This outfall receives flow from the surge protection valve discharge. The maximum flow from this intermittent discharge is 0.003 MGD.

See Attachment 3 for the Industrial Rating Worksheet for Outfall 009.

The facility and the discharge locations are identified on the attached topographic map – Occoquan Quadrangle (DEQ 194A) (Attachment 4).

TABLE 1 – Outfall Description

Outfall Number	Discharge Sources	Treatment	Max 30-day Flow	Outfall Latitude and Longitude
001	Flows from water treatment processes, building floor drains and stormwater	Sedimentation	5.8 MGD	38°41'11" 77°15'46"
002	Stormwater*	Best Management Practices	Rainfall dependent	38°41'36" 77°15'42"
003	Stormwater*	Best Management Practices	Rainfall dependent	38°41'42" 77°15'24"
004	Stormwater*	Best Management Practices	Rainfall dependent	38°41'46" 77°15'24"
005	Stormwater*	Best Management Practices	Rainfall dependent	38°41'47" 77°15'45"
006	Stormwater*	Best Management Practices	Rainfall dependent	38°41'54" 77°15'25"
007	Raw Water Screen Wash Drain	Screening	0.006 MGD	38°41'38" 77°16'36"
008	Total Organic Carbon (TOC) Analyzer and Sample Tap	None	0.007 MGD	38°41'38" 77°16'34"
009	Release from operation of pump suction or pump discharge surge valves.	None	0.003 MGD	38°41'14" 77°15'51"

* See Attachment 5 for the drainage areas for each stormwater outfall and a description of the stormwater treatment and best management practices utilized for each outfall.

11. Solids Treatment and Disposal Methods:

This is an industrial facility that is involved in the production of potable water. The facility does not produce sewage sludge and does not treat domestic sewage.

12. Discharges, Intakes, Monitoring Stations, Other Items in Vicinity of Discharge

TABLE 2 - Monitoring Stations and Other Dischargers

VAG840101	Vulcan Materials – Graham Quarry discharges to Little Occoquan Run.
1AOCC006.71	DEQ's Ambient Water Quality Monitoring Station located at the Route 123 Bridge.
VAG110083	Virginia Concrete – Woodbridge Ready Mixed Concrete facility discharges to the tidal Occoquan River downstream of the WTP.
VAG836074	Riverwalk at Occoquan discharge from a remediation system to the tidal Occoquan River.
VAG836076	Shell – Occoquan discharge from a remediation system to Occoquan River.
VAR050983	Occoquan Harbour Marina Industrial Stormwater discharge to Occoquan River
VAR051183	Hoffmasters Marina Industrial Stormwater discharge to Occoquan River

Upstream of this industrial discharge to the Occoquan River, Fairfax Water has their raw water intake from the Occoquan Reservoir.

13. Material Storage:

See Attachment 6 for a table of materials stored at this facility.

14. Site Inspection:

Performed by Alison Thompson on August 18, 2015 (Attachment 7).

15. Receiving Stream Water Quality and Water Quality Standards:

a. Ambient Water Quality Data

Outfalls 007 and 008 discharge in the section of the Occoquan Reservoir located between the Fairfax County Water Authority water supply dam and the low dam. This portion of the Occoquan Reservoir has not been monitored or assessed. The nearest downstream DEQ station with the most recent monitoring data is 1aOCC006.71, located at the Route 123 bridge, approximately 1.2 miles downstream of Outfalls 007 and 008. DEQ monitoring station 1aOCC006.99, located at the footbridge, was only sampled twice, both events in 2006.

Outfall 001 and Outfall 009 discharge into the tidal portion of the Occoquan River. Station 1aOCC006.71 is located approximately 0.3 miles downstream of Outfall 001 and 0.4 miles downstream of Outfall 009. The following is the water quality summary for this segment of the tidal Occoquan River, as taken from the 2012 Integrated Report:

Class II, Section 6, special stds. b, y.

DEQ monitoring stations located in this portion of the Occoquan River
Ambient water quality monitoring station 1aOCC006.99, located at footbridge

The recreation use is considered not supported, based on older fecal coliform data[1].

The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory. A PCB TMDL for the tidal Potomac River watershed has been completed and approved.

The aquatic life use is fully supporting[2]*. The submerged aquatic vegetation data is assessed as fully supporting the aquatic life use. For the open water aquatic life subuse; the thirty day mean is acceptable, however, the seven day mean and instantaneous levels have not been assessed*

The wildlife use is considered fully supporting.

[1] In the Draft 2014 Integrated Report, the recreation use is considered not supporting based on *E. coli* bacteria data that was recently collected at 1aOCC0006.71.
[2] Please note: The aquatic life use is listed as not supporting in the Draft 2014 Integrated Report. The open water aquatic life subuse is not met based upon the assessment of the thirty day mean for dissolved oxygen. This impairment will be addressed by the completed TMDL for the Chesapeake Bay watershed.

b. 303(d) Listed Stream Segments and Total Maximum Daily Loads (TMDLs)

TABLE 3 - 303(d) Impairment and TMDL information for the receiving stream segment

Waterbody Name	Impaired Use	Cause	TMDL completed	WLA	Basis for WLA	TMDL Schedule
Impairment Information in the 2012 Integrated Report						
Occoquan River*	Recreation	Fecal Coliform	No	--	--	2016
	Fish Consumption	PCBs	Potomac River Watershed PCB 10/31/2007	None	N/A	--

* Please note that in the Draft 2014 Integrated Assessment, the Occoquan River is listed with a dissolved oxygen impairment for the aquatic life use. The dissolved oxygen impairment will be covered by the completed TMDL for the Chesapeake Bay watershed; however, the Bay TMDL and the WLAs contained within the TMDL are not addressed in this planning statement.

TABLE 4 - Information on Downstream 303(d) Impairments and TMDLs							
Waterbody Name	**Impaired Use**	**Cause**	**Distance From Outfall 001 (miles)**	**TMDL completed**	**WLA**	**Basis for WLA**	**TMDL Schedule**
Impairment Information in the 2012 Integrated Report							
Occoquan Bay*	Aquatic Life	Estuarine Bioassessment	4.3	No	--	--	2018

* Please note that in the Draft 2014 Integrated Assessment, the Occoquan Bay is listed with a dissolved oxygen impairment for the aquatic life use. The dissolved oxygen impairment will be covered by the completed TMDL for the Chesapeake Bay watershed; however, the Bay TMDL and the WLAs contained within the TMDL are not addressed in this planning statement.

Significant portions of the Chesapeake Bay and its tributaries are listed as impaired on Virginia's 303(d) list of impaired waters for not meeting the aquatic life use support goal, and the 2012 Virginia Water Quality Assessment 305(b)/303(d) Integrated Report indicates that much of the mainstem Bay does not fully support this use support goal under Virginia's Water Quality Assessment guidelines. Nutrient enrichment is cited as one of the primary causes of impairment. EPA issued the Bay TMDL on December 29, 2010. It was based, in part, on the Watershed Implementation Plans developed by the Bay watershed states and the District of Columbia.

The Chesapeake Bay TMDL addresses all segments of the Bay and its tidal tributaries that are on the impaired waters list. As with all TMDLs, a maximum aggregate watershed pollutant loading necessary to achieve the Chesapeake Bay's water quality standards has been identified. This aggregate watershed loading is divided among the Bay states and their major tributary basins, as well as by major source categories [wastewater, urban storm water, onsite/septic agriculture, air deposition]. Fact Sheet Section 17.f provides additional information on specific nutrient monitoring for this facility to implement the provisions of the Chesapeake Bay TMDL.

The planning statement is found in Attachment 8.

c. Receiving Stream Water Quality Criteria

Part IX of 9VAC25-260(360-550) designates classes and special standards applicable to defined Virginia river basins and sections. The receiving streams, Occoquan River and unnamed tributaries to the Occoquan River, are located within Section 6 of the Potomac River Basin, and classified as either Class II (Outfalls 001 and 009) or Class III waters (Outfalls 002, 003, 004, 005, 006, 007, and 008).

At all times, Class III waters must achieve a dissolved oxygen (D.O.) of 4.0 mg/L or greater, a daily average D.O. of 5.0 mg/L or greater, a temperature that does not exceed 32°C, and maintain a pH of 6.0-9.0 standard units (S.U.).

Class II tidal waters in the Chesapeake Bay and it tidal tributaries must meet dissolved oxygen concentrations as specified in 9VAC25-260-185 and maintain a pH of 6.0-9.0 standard units as specified in 9VAC25-260-50. In the Northern Virginia area, Class II waters must meet the Migratory Fish Spawning and Nursery Designated Use from February 1 through May 31. For the remainder of the year, these tidal waters must meet the Open Water use. The applicable dissolved oxygen concentrations are presented in the following table.

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TABLE 5 - Dissolved Oxygen Criteria (9VAC25-260-185)		
Designated Use	**Criteria Concentration/Duration**	**Temporal Application**
Migratory fish spawning and nursery	7-day mean > 6 mg/L (tidal habitats with 0-0.5 ppt salinity)	February 1 – May 31
	Instantaneous minimum > 5 mg/L	
Open-water[1,2]	30-day mean > 5.5 mg/L (tidal habitats with 0-0.5 ppt salinity) 30-day mean > 5 mg/L (tidal habitats with >0.5 ppt salinity)	Year-round
	7-day mean > 4 mg/L	
	Instantaneous minimum > 3.2 mg/L at temperatures < 29°C Instantaneous minimum > 4.3 mg/L at temperatures > 29°C	
Deep-water	30-day mean >3 mg/L	June 1-September 30
	1-day mean > 2.3 mg/L	
	Instantaneous minimum > 1.7 mg/L	
Deep-channel	Instantaneous minimum > 1 mg/L	June 1-September 30

[1]See subsection aa of 9VAC25-260-310 for site specific seasonal open-water dissolved oxygen criteria applicable to the tidal Mattaponi and Pamunkey Rivers and their tidal tributaries.

[2]In applying this open-water instantaneous criterion to the Chesapeake Bay and its tidal tributaries where the existing water quality for dissolved oxygen exceeds an instantaneous minimum of 3.2 mg/L, that higher water quality for dissolved oxygen shall be provided antidegradation protection in accordance with section 30 subsection A.2 of the Water Quality Standards.

Attachment 9 details other water quality criteria applicable to the receiving stream. Two spreadsheets are presented: the first are for Outfalls 001 and 009 that are located in the tidal portion of the Occoquan River and the second is for Outfalls 007 and 008 that are located in the free flowing portion of the Occoquan River below Fairfax Water's High Dam and above Fairfax Water's Low Dam.

Ammonia:

The fresh water, aquatic life Water Quality Criteria for Ammonia are dependent on the instream temperature and pH and the pH and temperature of the effluent. The 90th percentile temperature and pH values are used because they best represent the critical design conditions of the receiving stream. During the last reissuance, the pH and temperature of the receiving stream were determined to be 7.84 mg/L and 22.17°C. These values were based on a limited data set collected by DEQ's Ambient Monitoring Program from January 2000 to February 2003. There is no recent stream data; therefore, the previously established stream pH (7.84 S.U.) and an annual temperature (22.17°C) values shall be carried forward as part of this reissuance process. A default value of 15°C shall be used for the winter. The data set is found in Attachment 9.

The pH maximum effluent data from Outfall 001 provided on the Discharge Monitoring Reports from January 2010 through June 2015 were also reviewed. Since the volume of the discharge from Outfall 001 is significantly larger than the flows from the three new outfalls, staff believes that this data is most representative of the treatment processes and the pH data shall be used to establish the ammonia criteria. The more recent data is not significantly different than the previous data so the value established during the last reissuance (7.6 SU) shall be carried forward. The summary of the recent data is found in Attachment 9. Default temperature values of 20°C (annual) and 15°C (winter) shall be used.

Metals Criteria:
The Water Quality Criteria for some metals are dependent on the receiving stream's hardness (expressed as mg/L calcium carbonate). During the last reissuance, the average hardness of the receiving stream was determined to be 84 mg/L. This value was based on a limited data set collected by DEQ's Ambient Monitoring Program from January 2000 to February 2003; the values ranged from 13.6 mg/L to 266 mg/L. There is no recent data, so staff shall carry forward this average stream hardness value. The effluent total hardness may also be considered. There is one recent data point from Outfall 001, 72.3 mg/L that was provided as part of the permit application. The hardness-dependent metals criteria shown in Attachment 9 are based on these values.

Bacteria Criteria:
The Virginia Water Quality Standards at 9VAC25-260-170 A state that the following criteria shall apply to protect primary recreational uses in surface waters:

E. coli bacteria per 100 ml of water shall not exceed a monthly geometric mean of the following:

	Geometric Mean[1]
Freshwater *E. coli* (N/100 ml)	126

[1]For a minimum of four weekly samples [taken during any calendar month].

d. Receiving Stream Special Standards

The State Water Control Board's Water Quality Standards, River Basin Section Tables (9VAC25-260-360, 370 and 380) designates the river basins, sections, classes, and special standards for surface waters of the Commonwealth of Virginia. The receiving streams, the Occoquan River and unnamed tributaries to the Occoquan River, are located within Section 6 of the Potomac Basin. This section has been designated with special standards of "b" and "y."

Special Standard "b" (Potomac Embayment Standards) established effluent standards for all sewage plants discharging into Potomac River embayments and for expansions of existing plants discharging into non-tidal tributaries of these embayments. 9VAC25-415, Policy for the Potomac Embayments controls point source discharges of conventional pollutants into the Virginia embayment waters of the Potomac River, and their tributaries, from the fall line at Chain Bridge in Arlington County to the Route 301 Bridge in King George County. The regulation sets effluent limits for BOD_5, total suspended solids, phosphorus, and ammonia, to protect the water quality of these high profile waterbodies. The Potomac Embayment Standards are not applied to this industrial discharge since the discharges do not contain the pollutants of concern in appreciable amounts and the established effluent standards are for sewage treatment plants.

Special Standard "y" is the chronic ammonia criterion for tidal freshwater Potomac River and tributaries that enter the tidal freshwater Potomac River from Cockpit Point (below Occoquan Bay) to the fall line at Chain Bridge. During November 1 through February 14 of each year the thirty-day average concentration of total ammonia nitrogen (in mg N/L) shall not exceed, more than once every three years on the average the following chronic ammonia criterion:

$$\frac{0.0577}{1 + 10^{7.688-pH}} \quad \frac{2.487}{1 + 10^{pH-7.688}} \quad x\ 1.45(10^{0.028(25-MAX)})$$

MAX = temperature in °C or 7, whichever is greater.

The default design flow for calculating steady state waste load allocations for this chronic ammonia criterion is the 30Q10, unless statistically valid methods are employed which demonstrate compliance with the duration and return frequency of this water quality criterion. This standard is not applicable to this industrial discharge.

e. Occoquan Site Specific Study Final Report, June 1998, Black & Veatch

During 1993 to 1994, the permittee performed a dye study, a hydrodynamic study, and a biological monitoring study to address water quality issues related to the discharge of filter backwash solids from the former Fairfax Water Occoquan WTP. This WTP was located across the river from the Lorton/Griffith WTP's Outfall 001.

Among the findings were:

1) The dye study indicated that the mixing zone extends from 300 feet upstream to 1300 feet downstream of the outfalls from the Occoquan plant.

2) The hydrodynamic modeling study found that the hydrodynamic characteristics of the Occoquan River below the dam are governed by the flow over the dam. It concluded that the high dissolved copper concentrations in the river were the direct results of copper sulfate added to the Occoquan Reservoir and the discharge from the water treatment plant has no significant impact on the quality of the river below the dam.

3) The biological monitoring study found no impairment of fish population in the river and no significant impairment of the benthic macroinvertebrates other than a slight impairment within a small portion of the mixing zone in the immediate vicinity of the outfalls of the Occoquan Plant.

The Occoquan WTP has been decommissioned and is no longer operational.

16. Antidegradation (9VAC25-260-30):

All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

During the previous reissuances, the receiving stream was classified as Tier 1 because the lower reach of the Occoquan River below the dam is known to have high copper concentrations in the summertime due to Fairfax Water's practice of adding copper sulfate to the reservoir for algae control. Staff determined that this classification is still correct even though copper sulfate usage has been curtailed in recent years. There is also a fish consumption impairment due to PCBs in fish tissue.

Permit limits proposed have been established by determining wasteload allocations which will result in attaining and/or maintaining all water quality criteria which apply to the receiving stream, including narrative criteria. These wasteload allocations will provide for the protection and maintenance of all existing uses.

17. Effluent Screening, Wasteload Allocation, and Effluent Limitation Development:

To determine water quality-based effluent limitations for a discharge, the suitability of data must first be determined. Data is suitable for analysis if one or more representative data points is equal to or above the quantification level ("QL") and the data represent the exact pollutant being evaluated.

a. Effluent Screening:
Effluent data obtained from the permit application and the Discharge Monitoring Reports (DMRs) has been reviewed and determined to be suitable for evaluation. Effluent data were reviewed, and there have been no exceedances of the established limitations for the outfalls currently permitted.

b. Mixing Zones and Wasteload Allocations (WLAs):

Outfall 001 and 009
Wasteload allocations (WLAs) are calculated for those parameters in the effluent with the reasonable potential to cause an exceedance of water quality criteria. The water segment receiving the discharge via Outfall 001 is tidal; therefore the free flowing stream flows are not applicable. For tidal receiving waters, DEQ guidance recommends that the acute WLA is equal to two (2) times the water quality criterion. Staff guidance suggests that the chronic default value for the WLA is 50. The hydrodynamic study performed by the permittee in 1994 indicates dilution in the order of 10 to 1. A 10 to 1 dilution ratio, a more conservative approach, is therefore used in calculating the chronic WLA.

Staff derived wasteload allocations where parameters are reasonably expected to be present in an effluent discharged (e.g., total residual chlorine when chlorine is used as a means of disinfection) and where effluent data indicate the pollutant is present in the discharge above quantifiable levels.

With regard to the Outfall 001 discharge, the application data indicate Dissolved Copper and Dissolved Zinc are present in the discharge.

With regard to the Outfall 009 discharge, the application data indicate Sulfate, Total Aluminum, Total Iron, Total Manganese, Total Copper and Total Zinc are present in the discharge. The facility also provided data directly from the raw water supply, the Occoquan Reservoir, as comparison to the data from Outfall 009.

Outfalls 007 and 008

Wasteload allocations (WLAs) are calculated for those parameters in the effluent with the reasonable potential to cause an exceedance of water quality criteria. In this case since the critical flows 7Q10 and 1Q10 have been determined to be zero, the WLA's are equal to the WQS. The WLA values are then compared with available effluent data to determine the need for effluent limitations. Effluent limitations are needed if the 97th percentile of the daily effluent concentration values is greater than the acute wasteload allocation or if the 97th percentile of the four-day average effluent concentration values is greater than the chronic wasteload allocation. Effluent limitations are based on the most limiting WLA, the required sampling frequency, and statistical characteristics of the effluent data.

Wasteload allocations (WLAs) are calculated for those parameters in the effluent with the reasonable potential to cause an exceedance of water quality criteria. The basic calculation for establishing a WLA is the steady state complete mix equation:

$$WLA = \frac{C_o[Q_e + (f)(Q_s)] - [(C_s)(f)(Q_s)]}{Q_e}$$

Where:
- WLA = Wasteload allocation
- C_o = In-stream water quality criteria
- Q_e = Design flow
- Q_s = Critical receiving stream flow (1Q10 for acute aquatic life criteria; 7Q10 for chronic aquatic life criteria; 30Q10 for ammonia criteria; harmonic mean for carcinogen-human health criteria; and 30Q5 for non-carcinogen human health criteria)
- f = Decimal fraction of critical flow
- C_s = Mean background concentration of parameter in the receiving stream.

Since the water segment receiving the discharges via Outfalls 007 and 008 is considered to be lacustrine, and no dilution study has been completed, no mixing zone has been established and the WLA is equal to the C_o.

Staff derived wasteload allocations where parameters are reasonably expected to be present in an effluent (e.g., total residual chlorine where chlorine is used as a means of disinfection) and where effluent data indicate the pollutant is present in the discharge above quantifiable levels.

With regard to the Outfall 007 discharge, the application data indicate Sulfate, Total Aluminum, Total Iron, Total Manganese, Total Copper and Total Zinc are present in the discharge.

With regard to the Outfall 008 discharge, the application data indicate Sulfate, Total Aluminum, Total Iron, Total Manganese, Total Copper and Total Zinc are present in the discharge.

The facility also provided data directly from the raw water supply, the Occoquan Reservoir, as comparison to the data from Outfalls 007 and 008.

c. Effluent Limitations Toxic Pollutants –

9VAC25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Those parameters with WLAs that are near effluent concentrations are evaluated for limits.

The VPDES Permit Regulation at 9VAC25-31-230.D requires that monthly and weekly average limitations be imposed for continuous discharges from POTWs and monthly average and daily maximum limitations be imposed for all other continuous non-POTW discharges.

Outfall 001

Total Residual Chlorine (TRC): The last four reissuances did not include TRC limits, and no limits for TRC are proposed with this reissuance. Based on the volume of the quarry pit, the detention time, and past toxicity test results that passed the decision criteria (Attachment 11), staff's best professional opinion is that no TRC limits are necessary.

Dissolved Copper: The permit application indicated that Dissolved Copper was present in the discharge at a concentration of 17 ug/L. The Wasteload Allocations are 110 ug/L for the acute and 76 ug/L for the chronic based on the 10:1 dilution factor. The statistical analysis demonstrates that no limit is necessary (Attachment 10). Since there is no reasonable potential, no monthly monitoring is proposed during the next permit term. The facility shall perform one Attachment A scan (Fact Sheet Section 21.e) for the next reissuance.

Dissolved Zinc: The permit application indicated that Dissolved Zinc was present in the discharge at a concentration of 12 ug/L. The Wasteload Allocations are 1000 ug/L for the acute and 1000 ug/L for the chronic based on the 10:1 dilution factor. The statistical analysis demonstrates that no limit is necessary (Attachment 10). Since there is no reasonable potential, no monthly monitoring is proposed during the next permit term. The facility shall perform one Attachment A scan (Fact Sheet Section 21.e) for the next reissuance.

Outfall 007

Sulfate: The permit application indicated that Sulfate was present in the discharge at a concentration of 25 mg/L. The only Water Quality Standard for Sulfate is for Public Water Supplies. Since this outfall discharges just below the water supply dam and the intake, it is staff's best professional judgment that no further monitoring is required at this time.

Total Aluminum: The permit application indicated that Total Aluminum was present in the discharge at a concentration of 228 ug/L. At this time, there are no Water Quality Criteria established for Aluminum, therefore, it is staff's best professional judgment that no further monitoring is required at this time.

Total Iron: The permit application indicated that Total Iron was present in the discharge at a concentration of 195 ug/L. The only Water Quality Standard for Iron is for Public Water Supplies. Since this outfall discharges just below the water supply dam and the intake, it is staff's best professional judgment that no further monitoring is required at this time.

Total Manganese: The permit application indicated that Total Manganese was present in the discharge at a concentration of 245 ug/L. The only Water Quality Standard for Manganese is for Public Water Supplies. Since this outfall discharges just below the water supply dam and the intake, it is staff's best professional judgment that no further monitoring is required at this time.

Total Copper: The permit application indicated that Total Copper was present in the discharge at a concentration of 2 ug/L. The Wasteload Allocations are 9.9 ug/L for the acute and 6.8 ug/L for the chronic. The statistical analysis demonstrates that no limit is necessary (Attachment 10). Since there is no reasonable potential, no further monitoring is proposed during the next permit term.

Total Zinc: The permit application indicated that Total Zinc was present in the discharge at a concentration of 6 ug/L. The Wasteload Allocations are 89 ug/L for the acute and 90 ug/L for the chronic. The statistical analysis demonstrates that no limit is necessary (Attachment 10). Since there is no reasonable potential, no further monitoring is proposed during the next permit term.

Outfall 008

Sulfate: The permit application indicated that Sulfate was present in the discharge at a concentration of 27 mg/L. The only Water Quality Standard for Sulfate is for Public Water Supplies. Since this outfall discharges just below the water supply dam and the intake, it is staff's best professional judgment that no further monitoring is required at this time.

Total Aluminum: The permit application indicated that Total Aluminum was present in the discharge at a concentration of 63 ug/L. At this time, there are no Water Quality Criteria established for Aluminum, therefore, it is staff's best professional judgment that no further monitoring is required at this time.

Total Iron: The permit application indicated that Total Iron was present in the discharge at a concentration of 144 ug/L. The only Water Quality Standard for Iron is for Public Water Supplies. Since this outfall discharges just below the water supply dam and the intake, it is staff's best professional judgment that no further monitoring is required at this time.

Total Manganese: The permit application indicated that Total Manganese was present in the discharge at a concentration of 212 ug/L. The only Water Quality Standard for Manganese is for Public Water Supplies. Since this outfall discharges just below the water supply dam and the intake, it is staff's best professional judgment that no further monitoring is required at this time.

Total Copper: The permit application indicated that Total Copper was present in the discharge at a concentration of 6 ug/L. The Wasteload Allocations are 9.9 ug/L for the acute and 6.8 ug/L for the chronic. The statistical analysis demonstrates that a limit would be necessary (Attachment 10). However, since this is a new outfall and there is only one data point, staff will require one quarterly sample for dissolved copper to be collected during the next permit term. Total Hardness shall also be analyzed concurrently with the dissolved copper sample. The data will be evaluated during the next reissuance to determine if a limit is necessary.

Total Zinc: The permit application indicated that Total Zinc was present in the discharge at a concentration of <5 ug/L. The Wasteload Allocations are 89 ug/L for the acute and 90 ug/L for the chronic. Since the data point is less than the quantification level, there is no reasonable potential, no further monitoring is proposed during the next permit term.

Outfall 009

Sulfate: The permit application indicated that Sulfate was present in the discharge at a concentration of 21 mg/L. The only Water Quality Standard for Sulfate is for Public Water Supplies. Since this outfall discharges in the tidal portion of the Occoquan River well below the water supply dam and the intake, it is staff's best professional judgment that no further monitoring is required at this time.

Total Aluminum: The permit application indicated that Total Aluminum was present in the discharge at a concentration of 127 ug/L. At this time, there are no Water Quality Criteria established for Aluminum, therefore, it is staff's best professional judgment that no further monitoring is required at this time.

Total Iron: The permit application indicated that Total Iron was present in the discharge at a concentration of 564 ug/L. The only Water Quality Standard for Iron is for Public Water Supplies. Since this outfall discharges in the tidal portion of the Occoquan River well below the water supply dam and the intake, it is staff's best professional judgment that no further monitoring is required at this time.

Total Manganese: The permit application indicated that Total Manganese was present in the discharge at a concentration of 457 ug/L. The only Water Quality Standard for Manganese is for Public Water Supplies. Since this outfall discharges in the tidal portion of the Occoquan River well below the water supply dam and the intake, it is staff's best professional judgment that no further monitoring is required at this time.

Total Copper: The permit application indicated that Total Copper was present in the discharge at a concentration of 15 ug/L. The Wasteload Allocations are 110 ug/L for the acute and 76 ug/L for the chronic based on the 10:1 dilution factor. The statistical analysis demonstrates that no limit is necessary (Attachment 10). Since there is no reasonable potential, no further monitoring is proposed during the next permit term.

Total Zinc: The permit application indicated that Total Zinc was present in the discharge at a concentration of 10 ug/L. The Wasteload Allocations are 1000 ug/L for the acute and 1000 ug/L for the chronic based on the 10:1 dilution factor. The statistical analysis demonstrates that no limit is necessary (Attachment 10). Since there is no reasonable potential, no further monitoring is proposed during the next permit term.

d. Effluent Limitations and Monitoring– Conventional and Non-Conventional Pollutants

No changes to the total suspended solids (TSS) and pH limitations are proposed for Outfall 001. pH limitations are set at the water quality criteria. TSS limits are based on staff's best professional judgment.

pH limitations for Outfalls 007, 008, and 009 were established at the Water Quality Criteria. The facility shall monitor total suspended solids (TSS) without limitation at outfalls 008 and 009. The monitoring for TSS is based on staff's best professional judgment

e. Effluent Limitations, Outfalls 002, 003, 004, 005, and 006 – Storm Water Only

Some industrial storm water discharges may contain pollutants in quantities that could adversely affect water quality. Storm water discharges which are discharged through a conveyance or outfall are considered point sources and require coverage by a VPDES permit. The primary method to reduce or eliminate pollutants in storm water discharges from an industrial facility is through the use of best management practices (BMPs). Storm Water Pollution Prevention Plan (SWPPP) requirements are derived from the VPDES General Permit for Storm Water Discharges Associated with Industrial Activity, 9VAC25-151 et seq.

This facility's industrial sector is not one that is typically regulated under the General Permit. Also, there is no reasonable potential for the industrial activity within the drainage areas of each of these outfalls to impact the stormwater quality being discharged; therefore, it is staff's best professional judgment that the facility is authorized to discharge stormwater through these outfalls, but shall not be required to monitor the discharges or maintain a SWPPP.

f. Effluent Monitoring – Nutrients

Monitoring for Nitrates + Nitrites, Total Kjeldahl Nitrogen, Total Nitrogen, and Total Phosphorus are included in this permit for Outfall 001 based on the recommendations contained in Guidance Memo No. 14-2011 – *Nutrient Monitoring for*

"Nonsignificant" Discharges to the Chesapeake Bay Watershed. The monitoring is needed to verify assumptions made while developing the watershed implementation plan (WIP) for the Chesapeake Bay TMDL. The guidance recommends that industrial outfalls be monitored on an annual basis for the term of the permit for Total Kjeldahl Nitrogen (TKN), Nitrate+Nitrite, Total Nitrogen and Total Phosphorus.

It is staff's best professional judgment that nutrient monitoring not be placed on Outfalls 007, 008, and 009. These outfalls are mainly comprised of the raw water from the reservoir and will reflect the quality of the water in the reservoir. Data from the reservoir was provided as part of the application to demonstrate that the composition of the effluent of these outfalls closely mirrors the quality of the water in the reservoir. Additionally, there are no significant industrial processes associated with these outfalls.

g. Effluent Limitations and Monitoring Summary.

The effluent limitations are presented in the following table. Limits were established for Total Suspended Solids (only for Outfall 001), and pH for all outfalls. Monitoring was included for Flow, Total Suspended Solids (for Outfalls 007, 008 and 009), Dissolved Copper (Outfall 008), Total Hardness (Outfall 008), Total Phosphorus (Outfall 001), Total Nitrogen (Outfall 001), Total Kjeldahl Nitrogen (Outfall 001), Nitrate+Nitrite (Outfall 001), and Whole Effluent Toxicity (Outfall 001).

The limit for Total Suspended Solids is based on Best Professional Judgement.

Sample Type and Frequency are in accordance with the recommendations in the VPDES Permit Manual. The monitoring frequency was reduced with the 2005 reissuance due to the facility's compliance history. The quarterly monitoring is proposed to continue with this reissuance since the facility continues to have an excellent compliance history.

18. Antibacksliding:

All limits in this permit are at least as stringent as those previously established. Backsliding does not apply to this reissuance.

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19.a. Effluent Limitations/Monitoring Requirements: Outfall 001 - industrial process water discharge

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	1/3M*	Estimate
TSS (mg/L)	2	30 mg/L	NA	NA	60 mg/L	1/3M*	5G/8H
pH (s.u.)	3	NA	NA	6.0 S.U.	9.0 S.U.	1/3M*	Grab
Total Kjeldahl Nitrogen (TKN)	3, 4	NA	NA	NA	NL mg/L	1/YR**	5G/8H
Nitrate+Nitrite, as N	3, 4	NA	NA	NA	NL mg/L	1/YR**	5G/8H
Total Nitrogen #	3, 4	NA	NA	NA	NL mg/L	1/YR**	Calculated
Total Phosphorus	3, 4	NA	NA	NA	NL mg/L	1/YR**	5G/8H
Chronic Toxicity *C. dubia* – TUc	3	NA	NA	NA	NL	1/YR**	24 HC
Chronic Toxicity *P. promelas* – TUc	3	NA	NA	NA	NL	1/YR**	24 HC

The basis for the limitations codes are:

1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards
4. Guidance Memo No. 14-2011 – *Nutrient Monitoring for "Nonsignificant" Discharges to the Chesapeake Bay Watershed*

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
1/3M = Once every three months.
1/YR = Once every year.

24HC = A flow proportional composite sample collected manually or automatically, and discretely or continuously, for the entire discharge of the monitored 24-hour period. Where discrete sampling is employed, the permittee shall collect a minimum of twenty four (24) aliquots for compositing. Discrete sampling may be flow proportioned either by varying the time interval between each aliquot or the volume of each aliquot. Time composite samples consisting of a minimum of twenty four (24) grab samples obtained at hourly or smaller intervals may be collected where the permittee demonstrates that the discharge flow rate (gallons per minute) does not vary by ≥10% or more during the monitored discharge.

5G/8H = Eight Hour Composite – Consisting of five (5) grab samples collected at hourly intervals until the discharge ceases or five (5) grab samples at equal time intervals for the duration of the discharge if less than 8 hours in length.

Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

#Total Nitrogen = sum of TKN plus Nitrate+Nitrite, as N.

*The quarterly monitoring periods shall be January through March, April through June, July through September, and October through December. The DMR shall be submitted no later than the 10th day of the month following the monitoring period.

**The annual monitoring period shall be January through December. The DMR shall be submitted no later than the 10th day of the month following the monitoring period.

19.b. Effluent Limitations/Monitoring Requirements: Outfalls 002, 003, 004, 005, and 006 – Stormwater Discharges

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

The facility is authorized to discharge stormwater through each of these outfalls. No monitoring is required from these stormwater outfalls. Best Management Practices shall be utilized.

19.c. Effluent Limitations/Monitoring Requirements: Outfall 007 - High Dam discharge from the raw water screen wash drain

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency*	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	1/3M	Estimate
pH (s.u.)	3	NA	NA	6.0 S.U.	9.0 S.U.	1/3M	Grab

The basis for the limitations codes are:
1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
1/3M = Once every three months.

Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.
Grab = An individual sample collected over a period of time not to exceed 15-minutes.
*The quarterly monitoring periods shall be January through March, April through June, July through September, and October through December. The DMR shall be submitted no later than the 10th day of the month following the monitoring period.

19.d. Effluent Limitations/Monitoring Requirements: Outfall 008 - High dam discharge from the TOC analyzer and raw water sample tap

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency*	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	1/3M	Estimate
TSS (mg/L)	2	NL	NA	NA	NL	1/3M	Grab
pH (s.u.)	3	NA	NA	6.0 S.U.	9.0 S.U.	1/3M	Grab
Dissolved Copper (ug/L)#	3	NL	NA	NA	NL	1/3M	Grab
Total Hardness (mg/L as $CaCo_3$)#	3	NL	NA	NA	NL	1/3M	Grab

The basis for the limitations codes are:
1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
1/3M = Once every three months.

Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.
Grab = An individual sample collected over a period of time not to exceed 15-minutes.
*The quarterly monitoring periods shall be January through March, April through June, July through September, and October through December. The DMR shall be submitted no later than the 10th day of the month following the monitoring period.
#The Dissolved Copper and Total Hardness shall be collected concurrently.

19.e. Effluent Limitations/Monitoring Requirements: Outfall 009 - Discharge from the surge protection valve discharge at the raw water pump station

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency*	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	1/3M	Estimate
TSS (mg/L)	2	NL	NA	NA	NL	1/3M	Grab
pH (s.u.)	3	NA	NA	6.0 S.U.	9.0 S.U.	1/3M	Grab

The basis for the limitations codes are:
1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
1/3M = Once every three months.

Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.
Grab = An individual sample collected over a period of time not to exceed 15-minutes.
*The quarterly monitoring periods shall be January through March, April through June, July through September, and October through December. The DMR shall be submitted no later than the 10th day of the month following the monitoring period.

20. Other Permit Requirements:

a. Part I.B. of the permit contains quantification levels and compliance reporting instructions. 9VAC25-31-190.L.4.c. requires an arithmetic mean for measurement averaging and 9VAC25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Specific analytical methodologies for toxics are listed in this permit section as well as quantification levels (QLs) necessary to demonstrate compliance with applicable permit limitations or for use in future evaluations to determine if the pollutant has reasonable potential to cause or contribute to a violation. Required averaging methodologies are also specified.

b. Permit Section Part I.C., details the requirements for Whole Effluent Toxicity (WET) Program.

The VPDES Permit Regulation at 9VAC25-31-210 requires monitoring and 9VAC25-31-220.I, requires limitations in the permit to provide for and assure compliance with all applicable requirements of the State Water Control Law and the Clean Water Act. A WET Program is imposed for municipal facilities with a design rate >1.0 MGD, with an approved pretreatment program or required to develop a pretreatment program, or those determined by the Board based on effluent variability, compliance history, IWC, and receiving stream characteristics.

Historically, the facility completed the acute whole effluent toxicity testing using *Ceriodaphnia dubia* and *Pimephales promelas*. During the current permit term, the effluent was evaluated for chronic whole effluent toxicity. Although the WTP discharges intermittently to the quarry, the discharge from the quarry is continuous, so it was staff's best professional judgment that chronic testing would best characterize the discharge. The summary of the toxicity results can be found in Attachment 11.

Due to the volume of the discharge and nature of the chemicals used for water treatment, annual chronic whole effluent toxicity monitoring is proposed for the next permit term. As stated above, reasonable potential determinations must take into account effluent quality and receiving stream variability. This would necessitate a sampling regime that rotates throughout a given calendar year; a quarterly schedule in order to obtain a seasonal perspective of the effluent quality. This methodology coincides with the VPDES Permit Regulation requirements that facilities submit representative data that reflects the seasonal variation in the discharge with each permit application (9VAC25-31-100.K.4.g.). Therefore, it is staff's best professional judgment that a WET testing protocol be proposed with this permit action that requires a rotating, quarterly testing regime for each annual monitoring requirement. The schedule as set forth within Part I.C. of the permit will ensure that the discharge is monitored for whole effluent toxicity and demonstrates seasonal variations.

21. Other Special Conditions:

a. O&M Manual Requirement. Required by Code of Virginia §62.1-44.19; VPDES Permit Regulation, 9VAC25-31-190.E and 40 CFR 122.41(e). The permittee shall maintain a current Operations and Maintenance (O&M) Manual. The permittee shall operate the treatment works in accordance with the O&M Manual and shall make the O&M Manual available to Department personnel for review upon request. Any changes in the practices and procedures followed by the permittee shall be documented in the O&M Manual within 90 days of the effective date of the changes. Non-compliance with the O&M Manual shall be deemed a violation of the permit.

b. Notification Levels. Required by VPDES Permit Regulation 9VAC-31-200A for all manufacturing, commercial, mining, and silvacultural discharges. The permittee shall notify the Department as soon as they know or have reason to believe:

1. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in this permit, if that discharge will exceed the highest of the following notification levels:
   (a) One hundred micrograms per liter;
   (b) Two hundred micrograms per liter for acrolein and acrylonitrile; five hundred micrograms per liter for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter for antimony;
   (c) Five times the maximum concentration value reported for that pollutant in the permit application; or
   (d) The level established by the Board.

2. That any activity has occurred or will occur which would result in any discharge, on a nonroutine or infrequent basis, of a toxic pollutant which is not limited in this permit, if that discharge will exceed the highest of the following notification levels:
   (a) Five hundred micrograms per liter;
   (b) One milligram per liter for antimony;
   (c) Ten times the maximum concentration value reported for that pollutant in the permit application; or
   (d) The level established by the Board.

c. Materials Handling/Storage. 9VAC25-31-50 A prohibits the discharge of any wastes into State waters unless authorized by permit. Code of Virginia §62.1-44.16 and §62.1-44.17 authorize the Board to regulate the discharge of industrial waste or other waste.

d. Water Quality Criteria Reopener. The VPDES Permit Regulation at 9VAC25-31-220 D. requires establishment of effluent limitations to ensure attainment/maintenance of receiving stream water quality criteria. Should data collected and submitted for Attachment A of the permit, indicate the need for limits to ensure protection of water quality criteria, the permit may be modified or alternately revoked and reissued to impose such water quality-based limitations.

e. Water Quality Criteria Monitoring. State Water Control Law §62.1-44.21 authorizes the Board to request information needed to determine the discharge's impact on State waters. States are required to review data on discharges to identify actual or potential toxicity problems, or the attainment of water quality goals, according to 40 CFR Part 131, Water Quality Standards, subpart 131.11. To ensure that water quality criteria are maintained, the permittee is required to analyze the facility's effluent from Outfall 001 for the substances noted in Attachment A of this VPDES permit once during the permit term.

f. TMDL Reopener: This special condition is to allow the permit to reopened if necessary to bring it in compliance with any applicable TMDL that may be developed and approved for the receiving stream.

Permit Section Part II. Required by VPDES Regulation 9VAC25-31-190, Part II of the permit contains standard conditions that appear in all VPDES Permits. In general, these standard conditions address the responsibilities of the permittee, reporting requirements, testing procedures and records retention.

22. Changes to the Permit from the Previously Issued Permit:

a. Special Conditions:

1) The Stormwater Management and Stormwater Pollution Prevention Plan requirements have been removed from this draft since the facility's industrial sector is not included in the VPDES General Permit for Storm Water Discharges Associated with Industrial Activity, 9VAC25-151and there is no reasonable potential for the stormwater from Outfalls 002, 003, 004, 005 and 006 to impact water quality.

2) The Whole Effluent Toxicity language has been updated in accordance with current agency guidance.

b. Monitoring and Effluent Limitations:
1) Three outfalls were added to the draft permit, Outfalls 007, 008 and 009, to account for discharges from the raw water screen wash drain, the Total Organic Carbon (TOC) analyzer and raw water sample tap, and the surge protection valve discharge from the raw water pump station.

c. Other Changes:
1) The river mile for Outfall 001 was updated based on the planning statement.

23. Variances/Alternate Limits or Conditions:

None.

24. Public Notice Information:
First Public Notice Date: 11/3/15 Second Public Notice Date: 11/10/15

Public Notice Information is required by 9VAC25-31-280 B. All pertinent information is on file and may be inspected, and copied by contacting the: DEQ Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193, Telephone No. (703) 583-3834, Alison.Thompson@deq.virginia.gov. See Attachment 12 for a copy of the public notice document.

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer and of all persons represented by the commenter/requester, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the permit. Requests for public hearings shall state 1) the reason why a hearing is requested; 2) a brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit; and 3) specific references, where possible, to terms and conditions of the permit with suggested revisions. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given. The public may request an electronic copy of the draft permit and fact sheet or review the draft permit and application at the DEQ Northern Regional Office by appointment.

25. Additional Comments:
Previous Board Action(s): None.

Staff Comments: None.

Public Comment: No public comments were received during the public notice.

VA0002585 Fairfax Water – Griffith WTP
Fact Sheet Attachments

Attachment 1	Flow Frequency Determination
Attachment 2	Flow Contributions to permitted outfalls
Attachment 3	Industrial Rating Worksheets
Attachment 4	Topographic Map
Attachment 5	Stormwater Outfall drainage areas
Attachment 6	Material Storage
Attachment 7	Site Inspection Summary
Attachment 8	Planning Statement
Attachment 9	Water Quality Criteria and Wasteload Allocation Determinations
Attachment 10	Effluent Limitation Determinations
Attachment 11	Whole Effluent Toxicity Summary of Results
Attachment 12	Public Notice

ATTACHMENT 1

To: Shih-Cheng Chang@WDBRG@DEQ
Cc:
Bcc:
From: Paul E. Herman@WQA@DEQ
Subject: fwd: Lorton WTP - VA0002585
Date: Wednesday, February 2, 2000 10:36:27 EST
Attach: BEYOND.RTF
Certify: N
Priority: Normal
Defer until:
Expires:
Forwarded by:

Shih-Cheng,

One more piece of data....

The drainage area of the Occoquan River at the dam is 570 square miles.
---------- Original Text ----------

From: Paul E. Herman@WQA@DEQ, on 2/2/2000 10:32 AM:
To: Shih-Cheng Chang@WDBRG@DEQ

Shih-Cheng,

As there have been no changes in the location of the WTP outfall, my May 11, 1994, memo to Raymond Jay remains in effect. The Lorton WTP discharges to the Occoquan River just below the dam. During low flow periods, the inflow into the reservoir is may be exceeded by the withdrawal from the reservoir by the WTP. When this occurs, there is no flow expected to be released through the dam. Therefore, there is no flow in the river at the discharge point.

Please refer to my May 11, 1994, memo concerning this facility for the appropriate flow data to use in the permit development.

If you have any questions, please give me a call.

Paul

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY - WATER DIVISION
Water Quality Assessments and Planning
629 E. Main Street P.O. Box 10009 Richmond, Virginia 23240

SUBJECT: Flow Frequency Determination
Fairfax County Water Authority, Lorton WTP - VA#0002585

TO: Ray Jay, NRO

FROM: Paul Herman, OWRM-WQAP Paul

DATE: May 11, 1994

COPIES: Ron Gregory, Charles Martin, Dale Phillips, Curt Wells, File

The Fairfax County Water Authority (FCWA), Lorton WTP discharges to the Occoquan River near Occoquan, VA. Stream flow frequencies are required at this site for use by the permit writer in developing effluent limitations for the VPDES permit.

The USGS operated a continuous record gage on the Occoquan River near Occoquan, VA (#01657500) from 1913-1916, 1920-1923, and 1937-1956. The gage was located on a stretch of the river which has been inundated by the reservoir. The gage was selected to represent the flow entering the reservoir. The flow frequencies for the gage and the discharge point are presented below. The values at the discharge point were determined by drainage area proportions and do not address any discharges or springs lying between the dam and the discharge point. The withdrawal by the FCWA from the Occoquan Reservoir must be subtracted from the flow frequencies. The maximum withdrawal during high flow periods and low flow periods must be considered.

Occoquan River near Occoquan, VA (#01657500):

Drainage Area =	570	mi^2	
1Q10 =	5.0	cfs	
7Q10 =	8.4	cfs	
High Flow 1Q10 =	35	cfs	(January-May)
High Flow 7Q10 =	50	cfs	(January-May)
30Q5 =	19	cfs	
HM =	77	cfs	

FCWA water withdrawal:

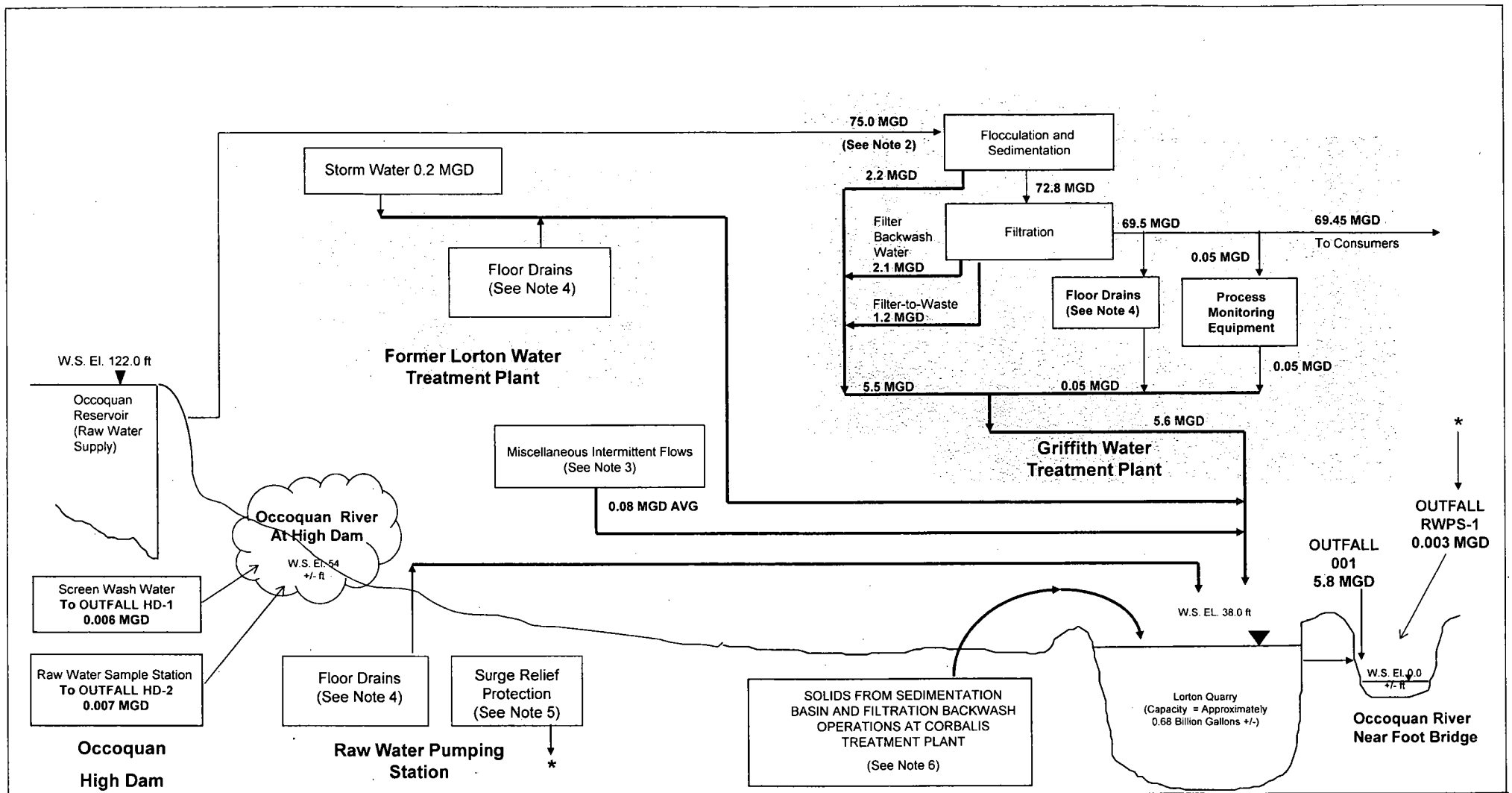
Maximum withdrawal, high flow = 108.6 cfs (May 1991)
Maximum withdrawal, low flow = 124.8 cfs (July 1988)

Since the maximum withdrawal during the high flow and low flow periods exceeds the flow into the Occoquan Reservoir, the flow frequencies are 0.0 cfs for the 1Q10, 7Q10, 30Q5, high flow 1Q10, and high flow 7Q10. The harmonic mean is undefined.

The Occoquan River is tidal at the discharge point. You may want to contact OWRM-Permits for the dilution factors to be used when determining the effluent limitations for the permit.

If you have any questions concerning this analysis, please let me know.

ATTACHMENT 2



Notes:

1. Evaporation losses negligible.
2. Base flow based on the average daily flows.
3. Individual Intermittent flows not shown in the schematic.
4. All floor drains have negligible intermittent , uncontaminated flows.
5. Flow during testing and surge relief only.
6. To be used in emergency situations only.

Rev. 2, 01/16/2015

FORM 2C, PART II. A
WATER FLOW SCHEMATIC
LORTON / GRIFFITH WTP
(INCLUDES RWPS & HIGH DAM)
FAIRFAX & PRINCE WILLIAM COUNTIES, VIRGINIA

Additional Information for FORM 2C, Part II.B.
Table 1: Operations, Flows, & Treatment

EPA I.D. Number: VAR000512939
VPDES Permit Number: VA0002585

1. OUT-FALL NO (list)	2. OPERATION(S) CONTRIBUTING FLOW			3. TREATMENT	
	a. OPERATION (list)	Facility**	b. AVERAGE FLOW (including units)	a. DESCRIPTION	b. LIST OF CODES FROM TABLE 2C-1
001	Floor Drains at Raw Water Pump Station	GRWPS	Intermittent Negligible	Sedimentation	1-U
RWPS1	Surge Protection Valve Discharge	GRWPS	Intermittent*	None	None
001	Flocculation-Sedimentation Basin	GWTP	2,200,000 gpd	Sedimentation	1-U
001	Flocculation-Sedimentation Basin	GWTP	Intermittent*	Sedimentation	1-U
001	Ozone Contactor Dewatering	GWTP	Intermittent*	Sedimentation	1-U
001	Ozone Contactor Filter Influent	GWTP	Intermittent*	Sedimentation	1-U
001	Ozone Contactor Effluent	GWTP	Intermittent*	Sedimentation	1-U
001	Filter Backwash	GWTP	2,100,000 gpd	Sedimentation	1-U
001	Filter-To-Waste	GWTP	1,200,000 gpd	Sedimentation	1-U
001	Filter Influent Flume Dewatering	GWTP	Intermittent*	Sedimentation	1-U
001	Filter Influent Splitter Box Dewatering	GWTP	Intermittent*	Sedimentation	1-U
001	Containment Sump Pump Discharge	GWTP	Intermittent*	Sedimentation	1-U
001	Filter Box Dewatering	GWTP	Intermittent*	Sedimentation	1-U
001	Continuous Monitoring Equipment	GWTP	55,800 gpd	Sedimentation	1-U
001	Deck Drain for Storm Water from Ozone Contactors	GWTP	Intermittent*	Sedimentation	1-U
001	Floor Drains in Operations Building	GWTP	Intermittent Negligible	Sedimentation	1-U
001	Floor Drains in other buildings	GWTP	Intermittent Negligible	Sedimentation	1-U
001	Mechanical Equipment Condensate	GWTP	Intermittent*	Sedimentation	1-U
001	Foundation Drainage	GWTP	Intermittent Negligible	Sedimentation	1-U
001	Site Storm Water Runoff	LWTP	Intermittent*	Sedimentation	1-U
001	Floor Drains in Butler Buildings	LWTP	Intermittent Negligible	Sedimentation	1-U
001	Solids from Corbalis Plant	CWTP	Intermittent*	Sedimentation	1-U
HD1	Screen Wash Pump Discharge	OHD	Intermittent*	None	None
HD2	Reservoir Raw Water Sampling Discharge	OHD	7,000 gpd	Screening	1-T

* Intermittent flows are detailed in Table 2: Intermittent or Seasonal Discharges

** GWTP = Griffith Water Treatment Plant; LWTP = Lorton Water Treatment Plant; GRWPS = Griffith Raw Water Pump Station; CWTP = Corbalis Water Treatment Plant; OHD = Occoquan High Dam

Table 2: Intermittent or Seasonal Discharges

EPA I.D. Number: VAR000512939
VPDES Permit Number: VA0002585

1. OUTFALL NUMBER (list)	2. OPERATION(S) CONTRIBUTION FLOW (list)	Facility(a)	3. FREQUENCY		4. FLOW				
			a. DAYS PER WEEK (specify average)	b. MONTHS PER YEAR (specify average)	a. FLOW RATE (mgd)		b. TOTAL VOLUME (specify with units)		c. DURATION (days)
					1. Long term average	2. Maximum Daily	1. Long term average	2. Maximum Daily	
001	Flocculation-Sedimentation Basin Dewatering (4)	GWTP	NA	2X/YR	NA	NA	23,804,590 gallons/year	5,951,148 gpd	2 days(b)
001	Ozone Contactor Dewatering	GWTP	NA	1X/YR	NA	NA	1,129,579 gallons/year	564,790 gpd	2 days(b)
001	Ozone Contactor Filter Influent Flume Dewatering	GWTP	NA	1X/YR	NA	NA	697,110 gallons/year	348,555 gpd	2 days(b)
001	Ozone Contactor Effluent Flume Dewatering	GWTP	NA	1X/YR	NA	NA	60,608 gallons/year	30,304 gpd	2 days(b)
001	Filter Influent Flume Dewatering	GWTP	NA	1X/YR	NA	NA	210,678 gallons/year	105,339 gpd	2 days(b)
001	Filter Influent Splitter Box Dewatering	GWTP	NA	1X/YR	NA	NA	17,425 gallons/year	8,713 gpd	2 days(b)
001	Containment Sump Pump Discharge	GWTP	NA	Varies	NA	NA	5,000 gallons/year	500 gpd	10 days
001	Filter Box Dewatering	GWTP	NA	1X/YR	NA	NA	2,179,165 gallons/year	1,089,583 gpd	2 days(b)
001	Deck Drain for Stormwater Collection at Ozone Contactor	GWTP	NA	40" rainfall/YR	NA	NA	123,670 gallons/year	NA	117 days(c)
001	Mechanical Equipment Condensate in Operations Building	GWTP	NA	4 MO/YR	0.0025	NA	316,224 gallons/year	NA	122 days
001	Mechanical Equipment Condensate in Finished Water Pump Station	GWTP	NA	4 MO/YR	0.0017	NA	210,816 gallons/year	NA	122 days
001	Storm Water Runoff	LWTP	NA	40" rainfall/YR	NA	NA	73,000,000 gallons/year	NA	117 days(c)
001	Solids from Corbalis Plant (g)	CWTP	NA	4MO/YR	NA	NA	40,000 CY/year	NA	NA
HD1	Screen Wash Pump Discharge	OHD	NA	15MIN/DAY	0.006	0.006	2,190,000 gallons/year	6,000 gpd	0.01 days(d)
RWPS1	Surge Protection Valve Maintenance Discharge (4)	GRWPS	NA	4X/YR	NA	NA	4,000,000 gallons/year	1,000,000 gpd	0.007 days(e)
RWPS1	Surge Protection Valve Discharge	GRWPS	NA	1X/YR	NA	NA	1,000,000 gallons/year	1,000,000 gpd	0.03 days(f)

(a) GWTP = Griffith Water Treatment Plant; LWTP = Lorton Water Treatment Plant; CWTP = Corbalis Water Treatment Plant; GRWPS = Griffith Raw Water Pump Station; OHD = Occoquan High Dam
(b) Assumes one process train dewatered per day
(c) Based on Average Annual Days of Rain in Northern Virginia
(d) 15 minutes per day
(e) 40 minutes per day
(f) Assumes one incident per year, 40 minutes per incident
(g) To be used in emergency situations only. Not used to date.

ATTACHMENT 3

NPDES PERMIT RATING WORK SHEET

[ ] Regular Addition
[ ] Discretionary Addition
[X] Score change, but no status Change
[ ] Deletion

VPDES NO. : VA0002585 – **Outfall 001**

Facility Name: Fairfax Water – Griffith WTP (formerly the Lorton WTP)
City / County: Fairfax
Receiving Water: Occoquan River
Reach Number: VAN-A25E

Is this facility a steam electric power plant (sic =4911) with one or more of the following characteristics?

1. Power output 500 MW or greater (not using a cooling pond/lake)
2. A nuclear power Plant
3. Cooling water discharge greater than 25% of the receiving stream's 7Q10 flow rater

[ ] Yes; score is 600 (stop here) [X] NO; (continue)

Is this permit for a municipal separate storm sewer serving a population greater than 100,000?

[ ] YES; score is 700 (stop here)
[X] NO; (continue)

FACTOR 1: Toxic Pollutant Potential

PCS SIC Code: _____ Primary Sic Code: 4941 Other Sic Codes: _____ _____ _____

Industrial Subcategory Code: 000 (Code 000 if no subcategory)

Determine the Toxicity potential from Appendix A. Be sure to use the TOTAL toxicity potential column and check one)

Toxicity Group	Code	Points	Toxicity Group	Code	Points	Toxicity Group	Code	Points
[ ] No process waste streams	0	0	[ ] 3.	3	15	[X] 7.	7	35
[ ] 1.	1	5	[ ] 4.	4	20	[ ] 8.	8	40
[ ] 2.	2	10	[ ] 5.	5	25	[ ] 9.	9	45
			[ ] 6.	6	30	[ ] 10.	10	50

Code Number Checked: 7

Total Points Factor 1: 35

FACTOR 2: Flow/Stream Flow Volume (Complete either Section A or Section B; check only one)

Section A – Wastewater Flow Only considered

Wastewater Type (see Instructions)			Code	Points
Type I:	Flow < 5 MGD	[ ]	11	0
	Flow 5 to 10 MGD	[ ]	12	10
	Flow > 10 to 50 MGD	[ ]	13	20
	Flow > 50 MGD	[ ]	14	30
Type II:	Flow < 1 MGD	[ ]	21	10
	Flow 1 to 5 MGD	[ ]	22	20
	Flow > 5 to 10 MGD	[ ]	23	30
	Flow > 10 MGD	[ ]	24	50
Type III:	Flow < 1 MGD	[ ]	31	0
	Flow 1 to 5 MGD	[ ]	32	10
	Flow > 5 to 10 MGD	[ ]	33	20
	Flow > 10 MGD	[ ]	34	30

Section B – Wastewater and Stream Flow Considered

Wastewater Type (see Instructions)	Percent of Instream Wastewater Concentration at Receiving Stream Low Flow		Code	Points
Type I/III:	< 10 %	[ ]	41	0
	10 % to < 50 %	[ ]	42	10
	> 50%	[ ]	43	20
Type II:	< 10 %	[ ]	51	0
	10 % to < 50 %	[X]	52	20
	> 50 %	[ ]	53	30

Code Checked from Section A or B: 5

Total Points Factor 2: 20

NPDES PERMIT RATING WORK SHEET

FACTOR 3: Conventional Pollutants

(only when limited by the permit)

A. Oxygen Demanding Pollutants: (check one) ☐ BOD ☐ COD ☐ Other: _____

Permit Limits: (check one)	Code	Points
☐ < 100 lbs/day	1	0
☐ 100 to 1000 lbs/day	2	5
☐ > 1000 to 3000 lbs/day	3	15
☐ > 3000 lbs/day	4	20

Code Number Checked: NA

Points Scored: 0

B. Total Suspended Solids (TSS)

Permit Limits: (check one)	Code	Points
☐ < 100 lbs/day	1	0
☒ 100 to 1000 lbs/day	2	5
☐ > 1000 to 5000 lbs/day	3	15
☐ > 5000 lbs/day	4	20

Code Number Checked: 2

Points Scored: 5

C. Nitrogen Pollutants: (check one) ☐ Ammonia ☐ Other: _____

Permit Limits: (check one)	*Nitrogen Equivalent*	Code	Points
☐	< 300 lbs/day	1	0
☐	300 to 1000 lbs/day	2	5
☐	> 1000 to 3000 lbs/day	3	15
☐	> 3000 lbs/day	4	20

Code Number Checked: NA

Points Scored: 0

Total Points Factor 3: 5

FACTOR 4: Public Health Impact

Is there a public drinking water supply located within 50 miles downstream of the effluent discharge (this include any body of water to which the receiving water is a tributary)? A public drinking water supply may include infiltration galleries, or other methods of conveyance that ultimately get water from the above reference supply.

☐ YES; (If yes, check toxicity potential number below)

☒ NO; (If no, go to Factor 5)

Determine the *Human Health* potential from Appendix A. Use the same SIC doe and subcategory reference as in Factor 1. (Be sure to use the *Human Health* toxicity group column – check one below)

Toxicity Group	Code	Points	Toxicity Group	Code	Points	Toxicity Group	Code	Points
☐ No process waste streams	0	0	☐ 3.	3	0	☐ 7.	7	15
☐ 1.	1	0	☐ 4.	4	0	☐ 8.	8	20
☐ 2.	2	0	☐ 5.	5	5	☐ 9.	9	25
			☐ 6.	6	10	☐ 10.	10	30

Code Number Checked: NA

Total Points Factor 4: 0

NPDES PERMIT RATING WORK SHEET

FACTOR 5: Water Quality Factors

A. *Is (or will) one or more of the effluent discharge limits based on water quality factors of the receiving stream (rather than technology-base federal effluent guidelines, or technology-base state effluent guidelines), or has a wasteload allocation been to the discharge*

		Code	Points
[ ]	YES	1	10
[X]	NO	2	0

B. *Is the receiving water in compliance with applicable water quality standards for pollutants that are water quality limited in the permit?*

		Code	Points
[X]	YES	1	0
[ ]	NO	2	5

C. *Does the effluent discharged from this facility exhibit the reasonable potential to violate water quality standards due to whole effluent toxicity?*

		Code	Points
[ ]	YES	1	10
[X]	NO	2	0

Code Number Checked: A 2 B 1 C 2

Points Factor 5: A 0 + B 0 + C 0 = **0**

FACTOR 6: Proximity to Near Coastal Waters

A. Base Score: Enter flow code here (from factor 2) 52

Check appropriate facility HPRI code (from PCS):

	HPRI#	Code	HPRI Score
[ ]	1	1	20
[ ]	2	2	0
[X]	3	3	30
[ ]	4	4	0
[ ]	5	5	20

HPRI code checked : 3

Enter the multiplication factor that corresponds to the flow code: 0.3

Flow Code	Multiplication Factor
11, 31, or 41	0.00
12, 32, or 42	0.05
13, 33, or 43	0.10
14 or 34	0.15
21 or 51	0.10
22 or 52	0.30
23 or 53	0.60
24	1.00

Base Score (HPRI Score): 30 X (Multiplication Factor) 0.3 = 9

B. Additional Points – NEP Program

For a facility that has an HPRI code of 3, does the facility discharge to one of the estuaries enrolled in the National Estuary Protection (NEP) program (see instructions) or the Chesapeake Bay?

	Code	Points
[X]	1	10
[ ]	2	0

C. Additional Points – Great Lakes Area of Concern

For a facility that has an HPRI code of 5, does the facility discharge any of the pollutants of concern into one of the Great Lakes' 31 area's of concern (see instructions)?

	Code	Points
[ ]	1	10
[X]	2	0

Code Number Checked: A 3 B 2 C 2

Points Factor 6: A 9 + B 10 + C 0 = **19**

NPDES PERMIT RATING WORK SHEET

SCORE SUMMARY

Factor	Description	Total Points
1	Toxic Pollutant Potential	35
2	Flows / Streamflow Volume	20
3	Conventional Pollutants	5
4	Public Health Impacts	0
5	Water Quality Factors	0
6	Proximity to Near Coastal Waters	19
	TOTAL (Factors 1 through 6)	79

S1. Is the total score equal to or grater than 80 ☐ YES; (Facility is a Major) ☒ NO

S2. If the answer to the above questions is no, would you like this facility to be discretionary major?

☒ NO

☐ YES; (Add 500 points to the above score and provide reason below:

Reason: _____

NEW SCORE : 79
OLD SCORE : 69

Permit Reviewer's Name : Alison Thompson
Phone Number: (703)583-3834
Date: 3/24/2015

NPDES PERMIT RATING WORK SHEET

[X] Regular Addition
[ ] Discretionary Addition
[ ] Score change, but no status Change
[ ] Deletion

VPDES NO. : VA0002585 – **Outfall 007**

Facility Name: Fairfax Water – Griffith WTP (formerly the Lorton WTP)
City / County: Fairfax
Receiving Water: Occoquan Reservoir
Reach Number: VAN-A25E

Is this facility a steam electric power plant (sic =4911) with one or more of the following characteristics?

1. Power output 500 MW or greater (not using a cooling pond/lake)
2. A nuclear power Plant
3. Cooling water discharge greater than 25% of the receiving stream's 7Q10 flow rater

[ ] Yes; score is 600 (stop here) [X] NO; (continue)

Is this permit for a municipal separate storm sewer serving a population greater than 100,000?

[ ] YES; score is 700 (stop here)
[X] NO; (continue)

FACTOR 1: Toxic Pollutant Potential

PCS SIC Code: _____ Primary Sic Code: 4941 Other Sic Codes: _____ _____ _____

Industrial Subcategory Code: 000 (Code 000 if no subcategory)

Determine the Toxicity potential from Appendix A. Be sure to use the TOTAL toxicity potential column and check one)

Toxicity Group	Code	Points	Toxicity Group	Code	Points	Toxicity Group	Code	Points
[ ] No process waste streams	0	0	[ ] 3.	3	15	[X] 7.	7	35
[ ] 1.	1	5	[ ] 4.	4	20	[ ] 8.	8	40
[ ] 2.	2	10	[ ] 5.	5	25	[ ] 9.	9	45
			[ ] 6.	6	30	[ ] 10.	10	50

Code Number Checked: 7

Total Points Factor 1: 35

FACTOR 2: Flow/Stream Flow Volume (Complete either Section A or Section B; check only one)

Section A – Wastewater Flow Only considered

Wastewater Type (see Instructions)			Code	Points
Type I:	Flow < 5 MGD	[ ]	11	0
	Flow 5 to 10 MGD	[ ]	12	10
	Flow > 10 to 50 MGD	[ ]	13	20
	Flow > 50 MGD	[ ]	14	30
Type II:	Flow < 1 MGD	[X]	21	10
	Flow 1 to 5 MGD	[ ]	22	20
	Flow > 5 to 10 MGD	[ ]	23	30
	Flow > 10 MGD	[ ]	24	50
Type III:	Flow < 1 MGD	[ ]	31	0
	Flow 1 to 5 MGD	[ ]	32	10
	Flow > 5 to 10 MGD	[ ]	33	20
	Flow > 10 MGD	[ ]	34	30

Section B – Wastewater and Stream Flow Considered

Wastewater Type (see Instructions)	Percent of Instream Wastewater Concentration at Receiving Stream Low Flow		Code	Points
Type I/III:	< 10 %	[ ]	41	0
	10 % to < 50 %	[ ]	42	10
	> 50%	[ ]	43	20
Type II:	< 10 %	[ ]	51	0
	10 % to < 50 %	[ ]	52	20
	> 50 %	[ ]	53	30

Code Checked from Section A or B: 21

Total Points Factor 2: 10

NPDES PERMIT RATING WORK SHEET

FACTOR 3: Conventional Pollutants

(only when limited by the permit)

A. Oxygen Demanding Pollutants: (check one) ☐ BOD ☐ COD ☐ Other: _____

Permit Limits: (check one)	Code	Points
☐ < 100 lbs/day	1	0
☐ 100 to 1000 lbs/day	2	5
☐ > 1000 to 3000 lbs/day	3	15
☐ > 3000 lbs/day	4	20

Code Number Checked: NA

Points Scored: 0

B. Total Suspended Solids (TSS)

Permit Limits: (check one)	Code	Points
☒ < 100 lbs/day	1	0
☐ 100 to 1000 lbs/day	2	5
☐ > 1000 to 5000 lbs/day	3	15
☐ > 5000 lbs/day	4	20

Code Number Checked: 1

Points Scored: 0

C. Nitrogen Pollutants: (check one) ☐ Ammonia ☐ Other: _____

Permit Limits: (check one)	*Nitrogen Equivalent*	Code	Points
☐	< 300 lbs/day	1	0
☐	300 to 1000 lbs/day	2	5
☐	> 1000 to 3000 lbs/day	3	15
☐	> 3000 lbs/day	4	20

Code Number Checked: NA

Points Scored: 0

Total Points Factor 3: 0

FACTOR 4: Public Health Impact

Is there a public drinking water supply located within 50 miles downstream of the effluent discharge (this include any body of water to which the receiving water is a tributary)? A public drinking water supply may include infiltration galleries, or other methods of conveyance that ultimately get water from the above reference supply.

☐ YES; (If yes, check toxicity potential number below)

☒ NO; (If no, go to Factor 5)

Determine the *Human Health* potential from Appendix A. Use the same SIC doe and subcategory reference as in Factor 1. (Be sure to use the *Human Health* toxicity group column – check one below)

Toxicity Group	Code	Points	Toxicity Group	Code	Points	Toxicity Group	Code	Points
☐ No process waste streams	0	0	☐ 3.	3	0	☐ 7.	7	15
☐ 1.	1	0	☐ 4.	4	0	☐ 8.	8	20
☐ 2.	2	0	☐ 5.	5	5	☐ 9.	9	25
			☐ 6.	6	10	☐ 10.	10	30

Code Number Checked: NA

Total Points Factor 4: 0

NPDES PERMIT RATING WORK SHEET

FACTOR 5: Water Quality Factors

A. *Is (or will) one or more of the effluent discharge limits based on water quality factors of the receiving stream (rather than technology-base federal effluent guidelines, or technology-base state effluent guidelines), or has a wasteload allocation been to the discharge*

		Code	Points
[ ]	YES	1	10
[X]	NO	2	0

B. *Is the receiving water in compliance with applicable water quality standards for pollutants that are water quality limited in the permit?*

		Code	Points
[X]	YES	1	0
[ ]	NO	2	5

C. *Does the effluent discharged from this facility exhibit the reasonable potential to violate water quality standards due to whole effluent toxicity?*

		Code	Points
[ ]	YES	1	10
[X]	NO	2	0

Code Number Checked: A 2 B 1 C 2

Points Factor 5: A 0 + B 0 + C 0 = **0**

FACTOR 6: Proximity to Near Coastal Waters

A. Base Score: Enter flow code here (from factor 2) 21

Check appropriate facility HPRI code (from PCS):

	HPRI#	Code	HPRI Score
[ ]	1	1	20
[ ]	2	2	0
[X]	3	3	30
[ ]	4	4	0
[ ]	5	5	20

Enter the multiplication factor that corresponds to the flow code: 0.1

Flow Code	Multiplication Factor
11, 31, or 41	0.00
12, 32, or 42	0.05
13, 33, or 43	0.10
14 or 34	0.15
21 or 51	0.10
22 or 52	0.30
23 or 53	0.60
24	1.00

HPRI code checked : 3

Base Score (HPRI Score): 30 X (Multiplication Factor) 0.1 = 3

B. Additional Points – NEP Program

For a facility that has an HPRI code of 3, does the facility discharge to one of the estuaries enrolled in the National Estuary Protection (NEP) program (see instructions) or the Chesapeake Bay?

	Code	Points
[X]	1	10
[ ]	2	0

C. Additional Points – Great Lakes Area of Concern

For a facility that has an HPRI code of 5, does the facility discharge any of the pollutants of concern into one of the Great Lakes' 31 area's of concern (see instructions)?

	Code	Points
[ ]	1	10
[X]	2	0

Code Number Checked: A 3 B 2 C 2

Points Factor 6: A 3 + B 10 + C 0 = **13**

NPDES PERMIT RATING WORK SHEET

SCORE SUMMARY

Factor	Description	Total Points
1	Toxic Pollutant Potential	35
2	Flows / Streamflow Volume	10
3	Conventional Pollutants	0
4	Public Health Impacts	0
5	Water Quality Factors	0
6	Proximity to Near Coastal Waters	13
	TOTAL (Factors 1 through 6)	58

S1. Is the total score equal to or grater than 80 ☐ YES; (Facility is a Major) ☒ NO

S2. If the answer to the above questions is no, would you like this facility to be discretionary major?

☒ NO

☐ YES; (Add 500 points to the above score and provide reason below:

Reason: _____

NEW SCORE : 58

OLD SCORE : New outfall

Permit Reviewer's Name : Alison Thompson

Phone Number: (703)583-3834

Date: 3/24/2015

NPDES PERMIT RATING WORK SHEET

[X] Regular Addition
[ ] Discretionary Addition
[ ] Score change, but no status Change
[ ] Deletion

VPDES NO. : VA0002585 – **Outfall 008**

Facility Name: Fairfax Water – Griffith WTP (formerly the Lorton WTP)
City / County: Fairfax
Receiving Water: Occoquan Reservoir
Reach Number: VAN-A25E

Is this facility a steam electric power plant (sic =4911) with one or more of the following characteristics?

1. Power output 500 MW or greater (not using a cooling pond/lake)
2. A nuclear power Plant
3. Cooling water discharge greater than 25% of the receiving stream's 7Q10 flow rater

[ ] Yes; score is 600 (stop here) [X] NO; (continue)

Is this permit for a municipal separate storm sewer serving a population greater than 100,000?

[ ] YES; score is 700 (stop here)
[X] NO; (continue)

FACTOR 1: Toxic Pollutant Potential

PCS SIC Code: _____ Primary Sic Code: 4941 Other Sic Codes: _____ _____ _____

Industrial Subcategory Code: 000 (Code 000 if no subcategory)

Determine the Toxicity potential from Appendix A. Be sure to use the TOTAL toxicity potential column and check one)

Toxicity Group	Code	Points	Toxicity Group	Code	Points	Toxicity Group	Code	Points
[ ] No process waste streams	0	0	[ ] 3.	3	15	[X] 7.	7	35
[ ] 1.	1	5	[ ] 4.	4	20	[ ] 8.	8	40
[ ] 2.	2	10	[ ] 5.	5	25	[ ] 9.	9	45
			[ ] 6.	6	30	[ ] 10.	10	50

Code Number Checked: 7

Total Points Factor 1: 35

FACTOR 2: Flow/Stream Flow Volume (Complete either Section A or Section B; check only one)

Section A – Wastewater Flow Only considered

Wastewater Type (see Instructions)			Code	Points
Type I:	Flow < 5 MGD	[ ]	11	0
	Flow 5 to 10 MGD	[ ]	12	10
	Flow > 10 to 50 MGD	[ ]	13	20
	Flow > 50 MGD	[ ]	14	30
Type II:	Flow < 1 MGD	[X]	21	10
	Flow 1 to 5 MGD	[ ]	22	20
	Flow > 5 to 10 MGD	[ ]	23	30
	Flow > 10 MGD	[ ]	24	50
Type III:	Flow < 1 MGD	[ ]	31	0
	Flow 1 to 5 MGD	[ ]	32	10
	Flow > 5 to 10 MGD	[ ]	33	20
	Flow > 10 MGD	[ ]	34	30

Section B – Wastewater and Stream Flow Considered

Wastewater Type (see Instructions)	Percent of Instream Wastewater Concentration at Receiving Stream Low Flow		Code	Points
Type I/III:	< 10 %	[ ]	41	0
	10 % to < 50 %	[ ]	42	10
	> 50%	[ ]	43	20
Type II:	< 10 %	[ ]	51	0
	10 % to < 50 %	[ ]	52	20
	> 50 %	[ ]	53	30

Code Checked from Section A or B: 21

Total Points Factor 2: 10

NPDES PERMIT RATING WORK SHEET

FACTOR 3: Conventional Pollutants

(only when limited by the permit)

A. Oxygen Demanding Pollutants: (check one) ☐ BOD , ☐ COD ☐ Other: _____

Permit Limits: (check one)	Code	Points
☐ < 100 lbs/day	1	0
☐ 100 to 1000 lbs/day	2	5
☐ > 1000 to 3000 lbs/day	3	15
☐ > 3000 lbs/day	4	20

Code Number Checked: NA

Points Scored: 0

B. Total Suspended Solids (TSS)

Permit Limits: (check one)	Code	Points
☒ < 100 lbs/day	1	0
☐ 100 to 1000 lbs/day	2	5
☐ > 1000 to 5000 lbs/day	3	15
☐ > 5000 lbs/day	4	20

Code Number Checked: 1

Points Scored: 0

C. Nitrogen Pollutants: (check one) ☐ Ammonia ☐ Other: _____

Permit Limits: (check one) *Nitrogen Equivalent*	Code	Points
☐ < 300 lbs/day	1	0
☐ 300 to 1000 lbs/day	2	5
☐ > 1000 to 3000 lbs/day	3	15
☐ > 3000 lbs/day	4	20

Code Number Checked: NA

Points Scored: 0

Total Points Factor 3: 0

FACTOR 4: Public Health Impact

Is there a public drinking water supply located within 50 miles downstream of the effluent discharge (this include any body of water to which the receiving water is a tributary)? A public drinking water supply may include infiltration galleries, or other methods of conveyance that ultimately get water from the above reference supply.

☐ YES; (If yes, check toxicity potential number below)

☒ NO; (If no, go to Factor 5)

Determine the *Human Health* potential from Appendix A. Use the same SIC doe and subcategory reference as in Factor 1. (Be sure to use the *Human Health* toxicity group column – check one below)

Toxicity Group	Code	Points	Toxicity Group	Code	Points	Toxicity Group	Code	Points
☐ No process waste streams	0	0	☐ 3.	3	0	☐ 7.	7	15
☐ 1.	1	0	☐ 4.	4	0	☐ 8.	8	20
☐ 2.	2	0	☐ 5.	5	5	☐ 9.	9	25
			☐ 6.	6	10	☐ 10.	10	30

Code Number Checked: NA

Total Points Factor 4: 0

NPDES PERMIT RATING WORK SHEET

FACTOR 5: Water Quality Factors

A. *Is (or will) one or more of the effluent discharge limits based on water quality factors of the receiving stream (rather than technology-base federal effluent guidelines, or technology-base state effluent guidelines), or has a wasteload allocation been to the discharge*

		Code	Points
[ ]	YES	1	10
[X]	NO	2	0

B. *Is the receiving water in compliance with applicable water quality standards for pollutants that are water quality limited in the permit?*

		Code	Points
[X]	YES	1	0
[ ]	NO	2	5

C. *Does the effluent discharged from this facility exhibit the reasonable potential to violate water quality standards due to whole effluent toxicity?*

		Code	Points
[ ]	YES	1	10
[X]	NO	2	0

Code Number Checked: A 2 B 1 C 2

Points Factor 5: A 0 + B 0 + C 0 = **0**

FACTOR 6: Proximity to Near Coastal Waters

A. Base Score: Enter flow code here (from factor 2) 21

Check appropriate facility HPRI code (from PCS):

	HPRI#	Code	HPRI Score
[ ]	1	1	20
[ ]	2	2	0
[X]	3	3	30
[ ]	4	4	0
[ ]	5	5	20

Enter the multiplication factor that corresponds to the flow code: 0.1

Flow Code	Multiplication Factor
11, 31, or 41	0.00
12, 32, or 42	0.05
13, 33, or 43	0.10
14 or 34	0.15
21 or 51	0.10
22 or 52	0.30
23 or 53	0.60
24	1.00

HPRI code checked : 3

Base Score (HPRI Score): 30 X (Multiplication Factor) 0.1 = 3

B. Additional Points – NEP Program

For a facility that has an HPRI code of 3, does the facility discharge to one of the estuaries enrolled in the National Estuary Protection (NEP) program (see instructions) or the Chesapeake Bay?

	Code	Points
[X]	1	10
[ ]	2	0

C. Additional Points – Great Lakes Area of Concern

For a facility that has an HPRI code of 5, does the facility discharge any of the pollutants of concern into one of the Great Lakes' 31 area's of concern (see instructions)?

	Code	Points
[ ]	1	10
[X]	2	0

Code Number Checked: A 3 B 2 C 2

Points Factor 6: A 3 + B 10 + C 0 = **13**

NPDES PERMIT RATING WORK SHEET

SCORE SUMMARY

Factor	Description	Total Points
1	Toxic Pollutant Potential	35
2	Flows / Streamflow Volume	10
3	Conventional Pollutants	0
4	Public Health Impacts	0
5	Water Quality Factors	0
6	Proximity to Near Coastal Waters	3
	TOTAL (Factors 1 through 6)	58

S1. Is the total score equal to or grater than 80 ☐ YES; (Facility is a Major) ☒ NO

S2. If the answer to the above questions is no, would you like this facility to be discretionary major?

☒ NO

☐ YES; (Add 500 points to the above score and provide reason below:

Reason: _____

NEW SCORE : 58

OLD SCORE : New outfall

Permit Reviewer's Name : Alison Thompson

Phone Number: (703)583-3834

Date: 3/24/2015

NPDES PERMIT RATING WORK SHEET

[X] Regular Addition
[ ] Discretionary Addition
[ ] Score change, but no status Change
[ ] Deletion

VPDES NO. : VA0002585 – **Outfall 009**

Facility Name: Fairfax Water – Griffith WTP (formerly the Lorton WTP)
City / County: Fairfax
Receiving Water: Occoquan River
Reach Number: VAN-A25E

Is this facility a steam electric power plant (sic =4911) with one or more of the following characteristics?

1. Power output 500 MW or greater (not using a cooling pond/lake)
2. A nuclear power Plant
3. Cooling water discharge greater than 25% of the receiving stream's 7Q10 flow rater

[ ] Yes; score is 600 (stop here) [X] NO; (continue)

Is this permit for a municipal separate storm sewer serving a population greater than 100,000?

[ ] YES; score is 700 (stop here)
[X] NO; (continue)

FACTOR 1: Toxic Pollutant Potential

PCS SIC Code: _____ Primary Sic Code: 4941 Other Sic Codes: _____ _____ _____

Industrial Subcategory Code: 000 (Code 000 if no subcategory)

Determine the Toxicity potential from Appendix A. Be sure to use the TOTAL toxicity potential column and check one)

Toxicity Group	Code	Points	Toxicity Group	Code	Points	Toxicity Group	Code	Points
[ ] No process waste streams	0	0	[ ] 3.	3	15	[X] 7.	7	35
[ ] 1.	1	5	[ ] 4.	4	20	[ ] 8.	8	40
[ ] 2.	2	10	[ ] 5.	5	25	[ ] 9.	9	45
			[ ] 6.	6	30	[ ] 10.	10	50

Code Number Checked: 7

Total Points Factor 1: 35

FACTOR 2: Flow/Stream Flow Volume (Complete either Section A or Section B; check only one)

Section A – Wastewater Flow Only considered

Wastewater Type (see Instructions)			Code	Points
Type I:	Flow < 5 MGD	[ ]	11	0
	Flow 5 to 10 MGD	[ ]	12	10
	Flow > 10 to 50 MGD	[ ]	13	20
	Flow > 50 MGD	[ ]	14	30
Type II:	Flow < 1 MGD	[X]	21	10
	Flow 1 to 5 MGD	[ ]	22	20
	Flow > 5 to 10 MGD	[ ]	23	30
	Flow > 10 MGD	[ ]	24	50
Type III:	Flow < 1 MGD	[ ]	31	0
	Flow 1 to 5 MGD	[ ]	32	10
	Flow > 5 to 10 MGD	[ ]	33	20
	Flow > 10 MGD	[ ]	34	30

Section B – Wastewater and Stream Flow Considered

Wastewater Type (see Instructions)	Percent of Instream Wastewater Concentration at Receiving Stream Low Flow		Code	Points
Type I/III:	< 10 %	[ ]	41	0
	10 % to < 50 %	[ ]	42	10
	> 50%	[ ]	43	20
Type II:	< 10 %	[ ]	51	0
	10 % to < 50 %	[ ]	52	20
	> 50 %	[ ]	53	30

Code Checked from Section A or B: 21

Total Points Factor 2: 10

NPDES PERMIT RATING WORK SHEET

FACTOR 3: Conventional Pollutants

(only when limited by the permit)

A. Oxygen Demanding Pollutants: (check one) ☐ BOD ☐ COD ☐ Other: _____

Permit Limits: (check one)	Code	Points
☐ < 100 lbs/day	1	0
☐ 100 to 1000 lbs/day	2	5
☐ > 1000 to 3000 lbs/day	3	15
☐ > 3000 lbs/day	4	20

Code Number Checked: NA

Points Scored: 0

B. Total Suspended Solids (TSS)

Permit Limits: (check one)	Code	Points
☒ < 100 lbs/day	1	0
☐ 100 to 1000 lbs/day	2	5
☐ > 1000 to 5000 lbs/day	3	15
☐ > 5000 lbs/day	4	20

Code Number Checked: 1

Points Scored: 0

C. Nitrogen Pollutants: (check one) ☐ Ammonia ☐ Other: _____

Permit Limits: (check one) *Nitrogen Equivalent*	Code	Points
☐ < 300 lbs/day	1	0
☐ 300 to 1000 lbs/day	2	5
☐ > 1000 to 3000 lbs/day	3	15
☐ > 3000 lbs/day	4	20

Code Number Checked: NA

Points Scored: 0

Total Points Factor 3: 0

FACTOR 4: Public Health Impact

Is there a public drinking water supply located within 50 miles downstream of the effluent discharge (this include any body of water to which the receiving water is a tributary)? A public drinking water supply may include infiltration galleries, or other methods of conveyance that ultimately get water from the above reference supply.

☐ YES; (If yes, check toxicity potential number below)

☒ NO; (If no, go to Factor 5)

Determine the *Human Health* potential from Appendix A. Use the same SIC doe and subcategory reference as in Factor 1. (Be sure to use the *Human Health* toxicity group column – check one below)

Toxicity Group	Code	Points	Toxicity Group	Code	Points	Toxicity Group	Code	Points
☐ No process waste streams	0	0	☐ 3.	3	0	☐ 7.	7	15
☐ 1.	1	0	☐ 4.	4	0	☐ 8.	8	20
☐ 2.	2	0	☐ 5.	5	5	☐ 9.	9	25
			☐ 6.	6	10	☐ 10.	10	30

Code Number Checked: NA

Total Points Factor 4: 0

NPDES PERMIT RATING WORK SHEET

FACTOR 5: Water Quality Factors

A. *Is (or will) one or more of the effluent discharge limits based on water quality factors of the receiving stream (rather than technology-base federal effluent guidelines, or technology-base state effluent guidelines), or has a wasteload allocation been to the discharge*

		Code	Points
[ ]	YES	1	10
[X]	NO	2	0

B. *Is the receiving water in compliance with applicable water quality standards for pollutants that are water quality limited in the permit?*

		Code	Points
[X]	YES	1	0
[ ]	NO	2	5

C. *Does the effluent discharged from this facility exhibit the reasonable potential to violate water quality standards due to whole effluent toxicity?*

		Code	Points
[ ]	YES	1	10
[X]	NO	2	0

Code Number Checked: A 2 B 1 C 2

Points Factor 5: A 0 + B 0 + C 0 = **0**

FACTOR 6: Proximity to Near Coastal Waters

A. Base Score: Enter flow code here (from factor 2) 21

Check appropriate facility HPRI code (from PCS):

	HPRI#	Code	HPRI Score
[ ]	1	1	20
[ ]	2	2	0
[X]	3	3	30
[ ]	4	4	0
[ ]	5	5	20

Enter the multiplication factor that corresponds to the flow code: 0.1

Flow Code	Multiplication Factor
11, 31, or 41	0.00
12, 32, or 42	0.05
13, 33, or 43	0.10
14 or 34	0.15
21 or 51	0.10
22 or 52	0.30
23 or 53	0.60
24	1.00

HPRI code checked : 3

Base Score (HPRI Score): 30 X (Multiplication Factor) 0.1 = 3

B. Additional Points – NEP Program

For a facility that has an HPRI code of 3, does the facility discharge to one of the estuaries enrolled in the National Estuary Protection (NEP) program (see instructions) or the Chesapeake Bay?

	Code	Points
[X]	1	10
[ ]	2	0

C. Additional Points – Great Lakes Area of Concern

For a facility that has an HPRI code of 5, does the facility discharge any of the pollutants of concern into one of the Great Lakes' 31 area's of concern (see instructions)?

	Code	Points
[ ]	1	10
[X]	2	0

Code Number Checked: A 3 B 2 C 2

Points Factor 6: A 3 + B 10 + C 0 = **13**

NPDES PERMIT RATING WORK SHEET

SCORE SUMMARY

Factor	Description	Total Points
1	Toxic Pollutant Potential	35
2	Flows / Streamflow Volume	10
3	Conventional Pollutants	0
4	Public Health Impacts	0
5	Water Quality Factors	0
6	Proximity to Near Coastal Waters	13
	TOTAL (Factors 1 through 6)	58

S1. Is the total score equal to or grater than 80 ☐ YES; (Facility is a Major) ☒ NO

S2. If the answer to the above questions is no, would you like this facility to be discretionary major?

☒ NO

☐ YES; (Add 500 points to the above score and provide reason below:

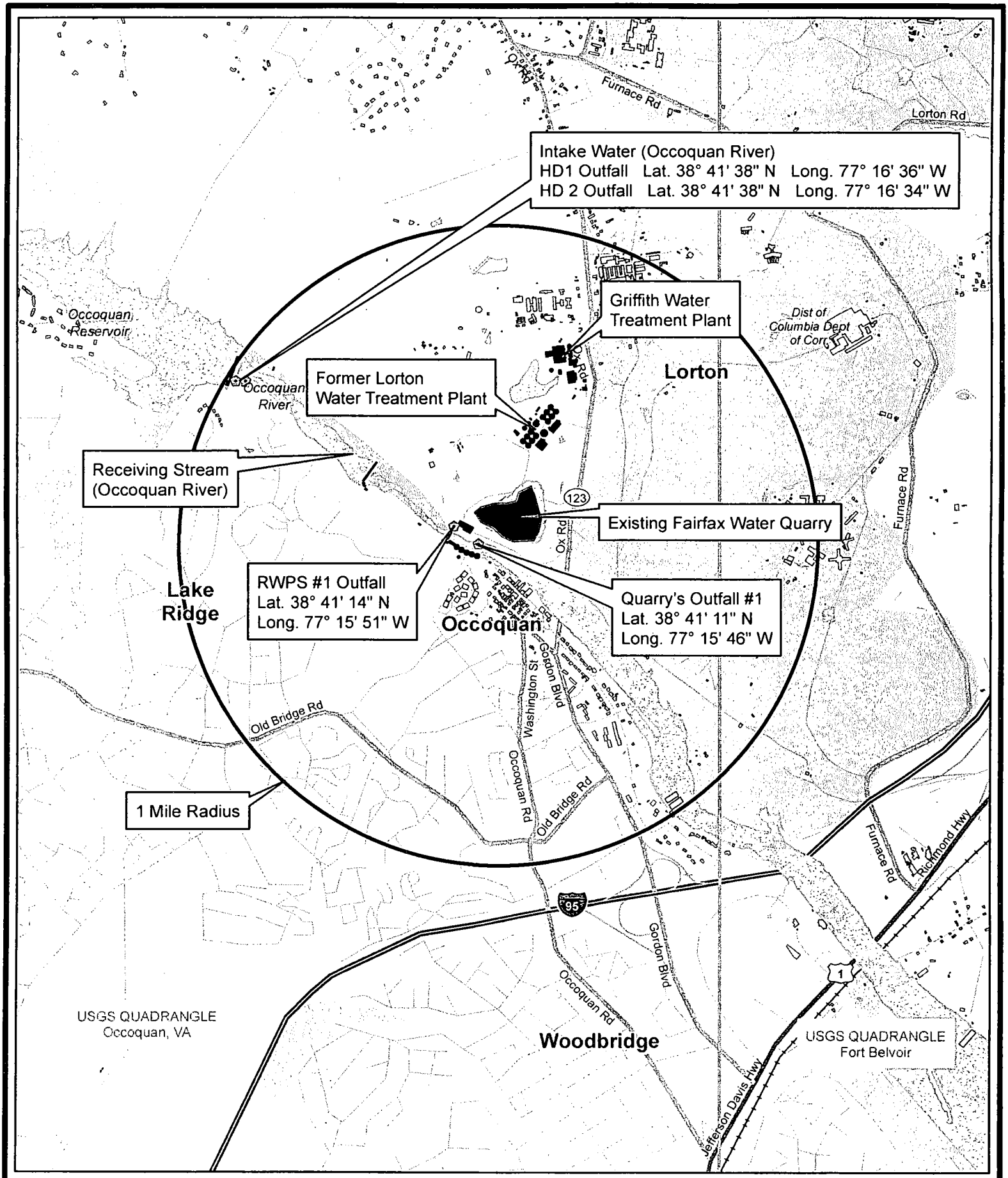
Reason: _____

NEW SCORE : 58

OLD SCORE : New outfall

Permit Reviewer's Name : Alison Thompson
Phone Number: (703)583-3834
Date: 3/24/2015

ATTACHMENT 4



Fairfax Water

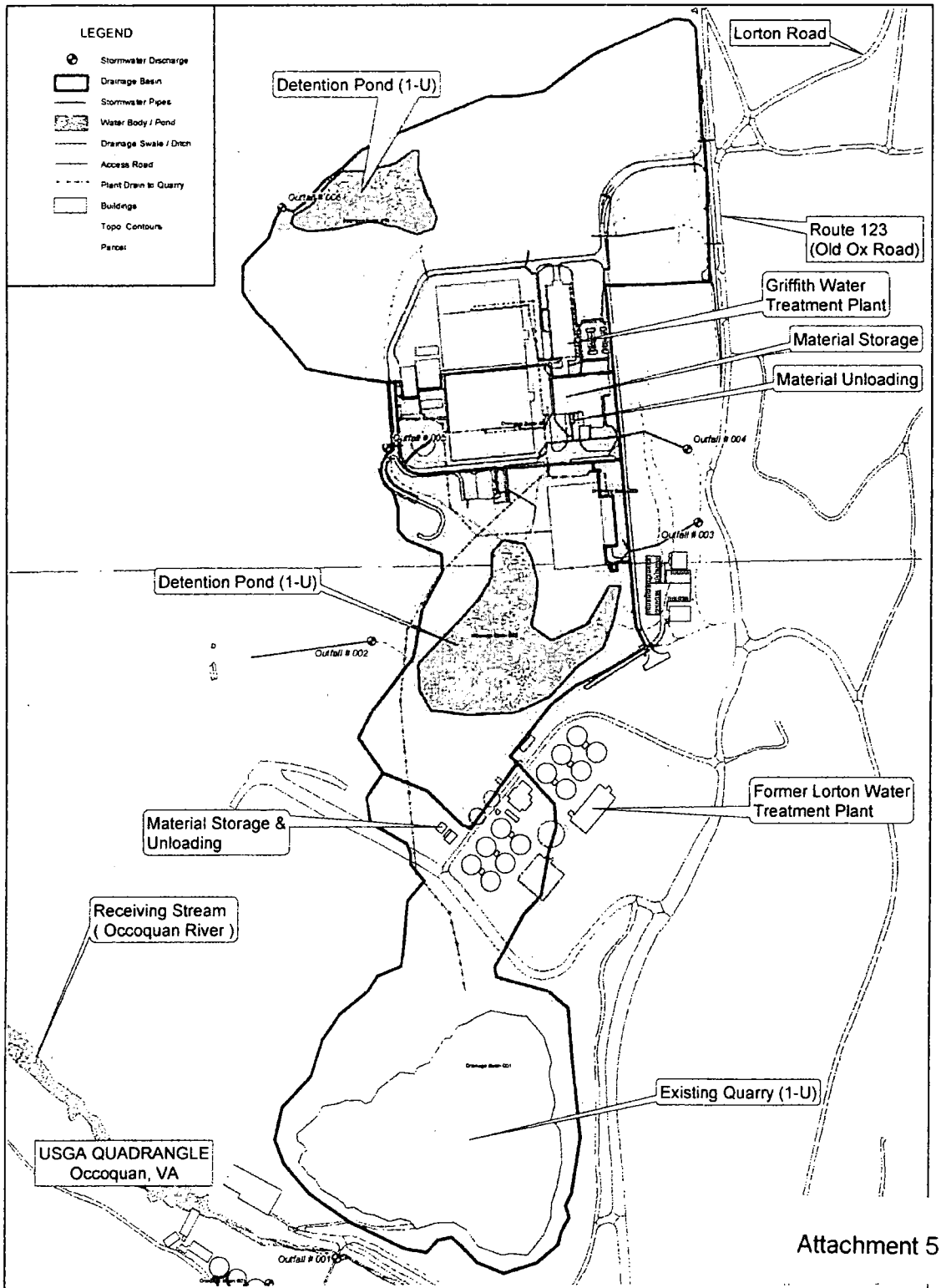
A-1-1 Location Map

Lorton / Griffith WTP Facilities

Scale:	1:24,000
FAIRFAX WATER	
USGS Quad:	Occoquan & Fort Belvoir, VA
Updated by:	H. Mogilevich
Date Printed:	1/15/2015

ATTACHMENT 5

FORM 2F, PART III, "Site Drainage Map"
VPDES Permit



Attachment 5

Fairfax Water	N	Scale: 1:2,500
		Date Printed: 01/06/2005
		USGS Quad: Occoquan, Va
	Virginia State Plain, North, NAD-83	FORM 2F, PART III, "Site Drainage Map"

Additional Information for FORM 2F, Part IV.A.
Table 4: Descriptin & Area of each Outfall

EPA I.D. Number: VAR000512939
VPDES Permit Number: VA0002585

Outfall Number	Area of Impervious Surface (Acres)	Total Area Drained (Acres)	Additional Comments
001	3.7	40.8	
002	6.1	27.8	
003	0.45	3.4	
004	6.5	11.2	Includes 2.1 acres of open tankage which captures rainfall and prevents stormwater discharge
005	0.48	1.2	
006	9.9	47.6	Includes 2.1 acres of open tankage which captures rainfall and prevents stormwater discharge

Additional Information for FORM 2F, Part IV.C.
Table 5: Description of Controls For Each Outfall

EPA I.D. Number: VAR000512939
VPDES Permit Number: VA0002585

Outfall Number	Controls / BMPs	List codes from Table 2F-1
001	One stormwater detention basin (0.68 Billion Gallons) provides control measures to reduce pollutants in stormwater runoff.	1-U
002	One stormwater detention basin (7.9 Acres) provides control measures to reduce pollutants in stormwater runoff.	1-U
003	Control measures include operator training, operator monitoring, leak detection equipment and containment basins.	
004	Control measures include operator training, operator monitoring, leak detection equipment and containment basins.	
005	Control measures include operator training, operator monitoring, leak detection equipment and containment basins.	
006	One stormwater detention basin (2.7 Acres) provides control measures to reduce pollutants in stormwater runoff.	1-U

ATTACHMENT 6

Additional Information for FORM 2C, Part VI
Table 3: Chemicals Used & Stored

EPA I.D. Number: VAR000512939
VPDES Permit Number: VA0002585

Description of storage and containment practices for Chemicals and Fuels Stored On-site

Facility*	Chemical	Amount	Units	Location	Containment	Drains	Liquid?
GRWPS	Potassium Permanganate	33,000	Pounds	Inside	Yes	No	No
GWTP	Granular Activated Carbon	97,100	Cubic Feet	Inside	Yes	Yes, To Quarry	No
GWTP	Cationic Polymer	7,500	Gallons	Inside	Yes	No	Yes
GWTP	Sodium Hypochlorite	63,000	Gallons	Inside	Yes	No	Yes
GWTP	Sodium Bisulfite	7,500	Gallons	Inside	Yes	No	Yes
GWTP	Hydrofluosilicic Acid	10,000	Gallons	Inside	Yes	No	Yes
GWTP	Sodium Hydroxide	39,000	Gallons	Inside	Yes	No	Yes
GWTP	Phosphoric Acid	10,000	Gallons	Inside	Yes	No	Yes
GWTP	Polyaluminum Chloride	88,000	Gallons	Inside	Yes	No	Yes
GWTP	Aqua Ammonia	16,000	Gallons	Outside	Yes	No	Yes
GWTP	Liquid Oxygen	43,000	Gallons	Outside	No	No	Yes**
GWTP	Heating Oil No.2	10,000	Gallons	Outside	Yes	No	Yes
GWTP	Heating Oil No.2	225	Gallons	Outside	Yes	No	Yes
GWTP	Diesel Fuel	250	Gallons	Outside	Yes	No	Yes
GWTP	Gasoline	3,000	Gallons	Outside	Yes	No	Yes
GWTP	Copper Sulfate Earth Tec	2,750	Gallons	Inside	Yes	Yes, To Quarry***	Yes
GWTP	Copper Sulfate Solid	32,000	Pounds	Inside	No	Yes, To Quarry***	No
LWTP	Used Oil	500	Gallons	Inside	No	Yes, To Quarry***	Yes
LWTP	Potassium Permanganate	18,000	Pounds	Inside	Yes	Yes, To Quarry***	No
High Dam	Potassium Permanganate	1,000	Pounds	Inside	Yes	No	No
High Dam	Liquid Oxygen	15,000	Gallons	Outside	No	No	Yes**

* GWTP = Griffith Water Treatment Plant; GRWPS = Griffith Raw Water Pump Station; LWTP = Lorton Water Treatment Plant

** Liquid Oxygen vaporizes to gaseous oxygen upon exposure to ambient air.

*** Floor drains referenced are normally plugged and only opened to allow non-contaminated potable water to enter.

ATTACHMENT 7

Site Inspection

From: Alison Thompson

To: DEQ Reissuance File

Date: August 26, 2015

On August 18, 2015, DEQ conducted a site inspection of the Fairfax Water Griffith Water Treatment Plant (WTP) in support of the VPDES Permit reissuance. Present at the site inspection were Alison Thompson – DEQ-NRO, Mishelle Noble-Blair – Fairfax Water Chief Water Planning and Protection, A-J Wangner – Fairfax Water Senior Plant Engineer , and John Hanchak – Fairfax Water Manager Water Production.

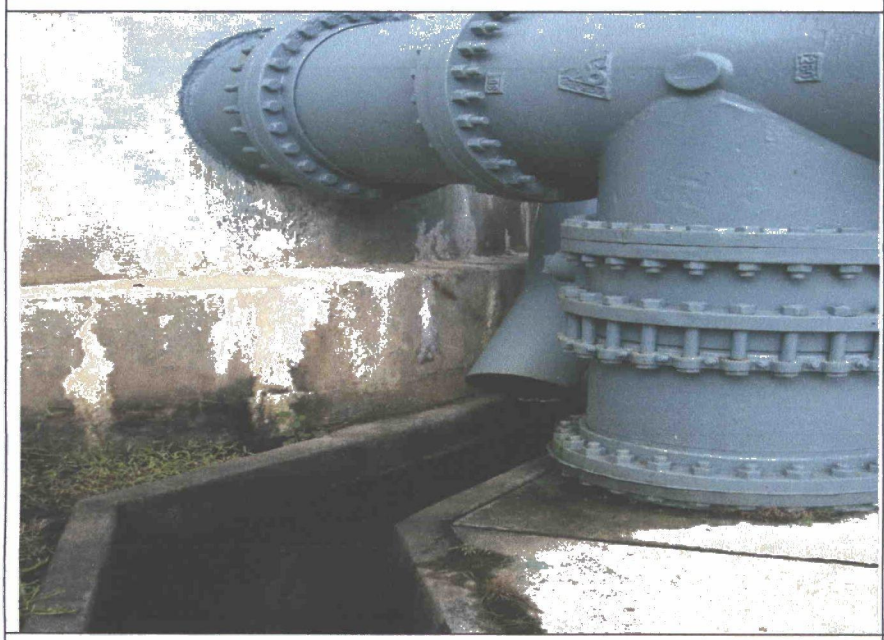
The water treatment operations and existing Outfall 001 were not inspected since there have been no major changes to the operations since the last reissuance. There have also been no compliance issues with Outfall 001 during the current permit term. Staff also did not inspect the stormwater outfalls 002, 003, 004, 005 and 006. No changes have been made to the drainage areas or best management practices. Fairfax Water did note that during the next permit term there would most likely be changes to the drainage area for Outfall 002 due to some mining activities by the neighboring Vulcan Quarry. They will update the appropriate pages of the application when and if the changes occur.

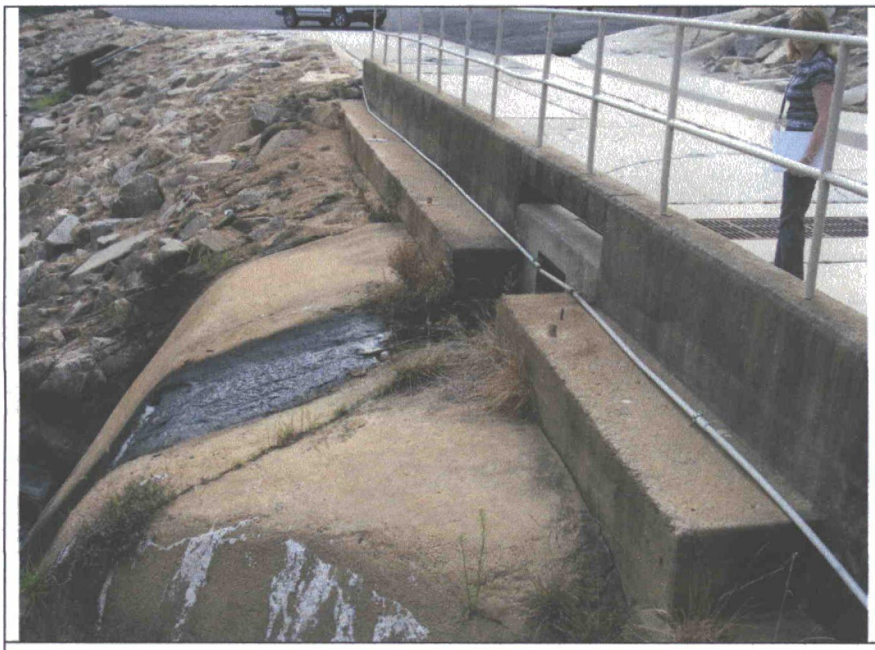
With this reissuance, Fairfax Water requested the addition of three new outfalls in the permit. Two of the outfalls are located near high dam which is located in Prince William County. These outfalls will be designated as Outfall 007 which is the discharge from the rotating screens backwash water and Outfall 008 which is the discharge from the raw water sample tap and the inline Total Organic Carbon (TOC) analyzer. The third outfall will be from the discharge of the raw water pump station surge valve protection and will be designated as Outfall 009. These three new outfalls were inspected during this visit to confirm the statements made in the application for reissuance dated February 13, 2015 and received on February 13, 2015.

Photos from the Fairfax Water – Griffith Water Treatment Plant site inspection on August 18, 2015.

Location of the old Occoquan WTP. All tanks have been removed and Fairfax Water will lease the land to the Town of Occoquan for use as a park.

	The pipelines for the raw water from the Occoquan Reservoir to the Griffith WTP. The raw water pump station is immediately to the right of the lines. The headwall for Outfall 009 (discharge from the raw water pump station surge protection valves) is located in between the pipelines and the pump station. This photo was taken from the Prince William County side of the Occoquan River.
	The headwall for Outfall 009 (discharge from the raw water pump station surge protection valves). This photo was taken from the Prince William County side of the Occoquan River.

	The rotating screens on top of high dam. The screens are backwashed with screened raw water. Discharge occurs on a daily basis for approximately 15 minutes. The backwash water is discharged via Outfall 007.
	The sample location for Outfall 007 at the base of the concrete tower of the rotating screens.

	The discharge point for Outfall 007. The flow is trenched under the access road and enters the lower portion of the reservoir just below high dam.
	The inline Total Organic Carbon (TOC) analyzer housed in a small building at high dam. The continuously flowing raw water sample tap is also in this building. The flows from the tap and the TOC analyzer are discharged via Outfall 008.

	The sample location for Outfall 008. Staff utilizes a long piece of wood to hold the flapper valve open to obtain a grab sample. The flapper valve to the left is no longer used.
	Another view of the wing wall for Outfall 008. The flow enters the lower portion of the reservoir just below high dam and about 25 feet north of Outfall 007.

	The manhole for the sample point for the raw water pump station. DEQ has designated the outfall as Outfall 009 in the permit, so the sign will be repainted.
	Sample point for Outfall 009.

ATTACHMENT 8

To:	Alison Thompson
From:	Jennifer Carlson
Date:	August 20, 2015
Subject:	Planning Statement for Fairfax Water Griffith Water Treatment Plant
Permit Number:	VA0002585

Information for Outfalls 001, 007, 008, 009:

Discharge Type:	Industrial
Discharge Flow:	5.8 MGD (Outfall 001)
Receiving Stream:	See table on last page of planning statement
Latitude / Longitude:	
Rivermile:	
Streamcode:	
Waterbody:	
Water Quality Standards:	
Drainage Area:	

1. Please provide water quality monitoring information for the receiving stream segment. If there is not monitoring information for the receiving stream segment, please provide information on the nearest downstream monitoring station, including how far downstream the monitoring station is from the outfall.

   Outfalls 007 and 008 discharge in the section of the Occoquan Reservoir located between the Fairfax County Water Authority water supply dam and the low dam. This portion of the Occoquan Reservoir has not been monitored or assessed. The nearest downstream DEQ station with the most recent monitoring data is 1aOCC006.71, located at the Route 123 bridge, approximately 1.2 miles downstream of Outfalls 007 and 008. DEQ monitoring station 1aOCC006.99, located at the footbridge, was only sampled twice, both events in 2006.

   Outfall 001 and Outfall 009 discharge into the tidal portion of the Occoquan River. Station 1aOCC006.71 is located approximately 0.3 miles downstream of Outfall 001 and 0.4 miles downstream of Outfall 009. The following is the water quality summary for this segment of the tidal Occoquan River, as taken from the 2012 Integrated Report:

   Class II, Section 6, special stds. b, y.

   DEQ monitoring stations located in this portion of the Occoquan River
   - *Ambient water quality monitoring station 1aOCC006.99, located at footbridge*

   The recreation use is considered not supported, based on older fecal coliform data[1].

   The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory. A PCB TMDL for the tidal Potomac River watershed has been completed and approved.

The aquatic life use is fully supporting[2]. The submerged aquatic vegetation data is assessed as fully supporting the aquatic life use. For the open water aquatic life subuse; the thirty day mean is acceptable, however, the seven day mean and instantaneous levels have not been assessed

The wildlife use is considered fully supporting.

[1] In the Draft 2014 Integrated Report, the recreation use is considered not supporting based on *E. coli* bacteria data that was recently collected at 1aOCC0006.71.

[2] Please note: The aquatic life use is listed as not supporting in the Draft 2014 Integrated Report. The open water aquatic life subuse is not met based upon the assessment of the thirty day mean for dissolved oxygen. This impairment will be addressed by the completed TMDL for the Chesapeake Bay watershed.

2. Does this facility discharge to a stream segment on the 303(d) list? If yes, please fill out Table A.

Yes. Outfall 001 and Outfall 009 discharges into the Tidal Occoquan River. This segment is also the first segment downstream of Outfall 007 and Outfall 008 that has been monitored and assessed.

Table A. 303(d) Impairment and TMDL information for the receiving stream segment

Waterbody Name	Impaired Use	Cause	TMDL completed	WLA	Basis for WLA	TMDL Schedule
Impairment Information in the 2012 Integrated Report						
Occoquan River*	Recreation	Fecal Coliform	No	--	--	2016
	Fish Consumption	PCBs	Potomac River Watershed PCB 10/31/2007	None	N/A	--

* Please note that in the Draft 2014 Integrated Assessment, the Occoquan River is listed with a dissolved oxygen impairment for the aquatic life use. The dissolved oxygen impairment will be covered by the completed TMDL for the Chesapeake Bay watershed; however, the Bay TMDL and the WLAs contained within the TMDL are not addressed in this planning statement.

3. Are there any downstream 303(d) listed impairments that are relevant to this discharge? If yes, please fill out Table B.

Table B. Information on Downstream 303(d) Impairments and TMDLs

Waterbody Name	Impaired Use	Cause	Distance From Outfall 001 (miles)	TMDL completed	WLA	Basis for WLA	TMDL Schedule
Impairment Information in the 2012 Integrated Report							
Occoquan Bay*	Aquatic Life	Estuarine Bioassessment	4.3	No	--	--	2018

* Please note that in the Draft 2014 Integrated Assessment, the Occoquan Bay is listed with a dissolved oxygen impairment for the aquatic life use. The dissolved oxygen impairment will be covered by the completed TMDL for the Chesapeake Bay watershed; however, the Bay TMDL and the WLAs contained within the TMDL are not addressed in this planning statement.

4. Is there monitoring or other conditions that Planning/Assessment needs in the permit?

   In support for the PCB impairment listed for the Occoquan tidal embayment, this facility is a candidate for low-level PCB monitoring, based upon its designation as an industrial facility. Low-level PCB analysis uses EPA Method 1668, which is capable of detecting low-level concentrations for all 209 PCB congeners. DEQ staff has concluded that low-level PCB monitoring is not warranted for this facility, as it is not expected to be a source of PCBs. Based upon this information, this facility will not be requested to monitor for PCBs.

5. Fact Sheet Requirements – Please provide information regarding any drinking water intakes located within a 5 mile radius of the discharge point.

   The Fairfax Water Authority Occoquan Reservoir intake is located within a 5 mile radius of the outfalls.

Information for Outfalls

Outfall ID	Receiving Water	Latitude	Longitude	Rivermile	Streamcode & Waterbody	Water Quality Standards	Drainage Area (sq. miles)
001	Occoquan River	38° 41' 11" N	-77° 15' 46" W	7.03	1aOCC --- VAN-A25E	Class II Section 6 Special Stds. b, y	N/A - Tidal Waters
007	Occoquan Reservoir	38° 41' 38" N	-77° 16' 36" W	7.97	1aOCC --- VAN-A25L	Class III Section 7 Special Stds. b	592
008	Occoquan Reservoir	38° 41' 38" N	-77° 16' 34" W	7.95	1aOCC --- VAN-A25L	Class III Section 7 Special Stds. b	592
009	Occoquan River	38° 41' 14" N	-77° 15' 51" W	7.11	1aOCC --- VAN-A25E	Class II Section 6 Special Stds. b, y	N/A - Tidal Waters

ATTACHMENT 9

FRESHWATER

Facility Name: Fairfax Water Griffith WTP Outfalls 001 and 009 Permit No.: VA0002585

Receiving Stream: Occoquan River (tidal portion) Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information		Stream Flows		Mixing Information		Effluent Information	
Mean Hardness (as CaCO3) =	84 mg/L	1Q10 (Annual) =	9 MGD	Annual - 1Q10 Mix =	100 %	Mean Hardness (as CaCO3) =	72.3 mg/L
90% Temperature (Annual) =	22.17 deg C	7Q10 (Annual) =	9 MGD	- 7Q10 Mix =	100 %	90% Temp (Annual) =	20 deg C
90% Temperature (Wet season) =	15 deg C	30Q10 (Annual) =	9 MGD	- 30Q10 Mix =	100 %	90% Temp (Wet season) =	15 deg C
90% Maximum pH =	7.84 SU	1Q10 (Wet season) =	9 MGD	Wet Season - 1Q10 Mix =	100 %	90% Maximum pH =	7.6 SU
10% Maximum pH =	SU	30Q10 (Wet season)	9 MGD	- 30Q10 Mix =	100 %	10% Maximum pH =	SU
Tier Designation (1 or 2) =	1	30Q5 =	9 MGD			Discharge Flow =	1 MGD
Public Water Supply (PWS) Y/N? =	n	Harmonic Mean =	9 MGD				
Trout Present Y/N? =	n						
Early Life Stages Present Y/N? =	y						

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Acenapthene	0	--	--	na	9.9E+02	--	--	na	9.9E+03	--	--	--	--	--	--	--	--	--	--	na	9.9E+03
Acrolein	0	--	--	na	9.3E+00	--	--	na	9.3E+01	--	--	--	--	--	--	--	--	--	--	na	9.3E+01
Acrylonitrile[C]	0	--	--	na	2.5E+00	--	--	na	2.5E+01	--	--	--	--	--	--	--	--	--	--	na	2.5E+01
Aldrin [C]	0	3.0E+00	--	na	5.0E-04	3.0E+01	--	na	5.0E-03	--	--	--	--	--	--	--	--	3.0E+01	--	na	5.0E-03
Ammonia-N (mg/l) (Yearly)	0	1.19E+01	1.95E+00	na	--	1.19E+02	1.95E+01	na	--	--	--	--	--	--	--	--	--	1.19E+02	1.95E+01	na	--
Ammonia-N (mg/l) (High Flow)	0	1.19E+01	3.05E+00	na	--	1.19E+02	3.05E+01	na	--	--	--	--	--	--	--	--	--	1.19E+02	3.05E+01	na	--
Anthracene	0	--	--	na	4.0E+04	--	--	na	4.0E+05	--	--	--	--	--	--	--	--	--	--	na	4.0E+05
Antimony	0	--	--	na	6.4E+02	--	--	na	6.4E+03	--	--	--	--	--	--	--	--	--	--	na	6.4E+03
Arsenic	0	3.4E+02	1.5E+02	na	--	3.4E+03	1.5E+03	na	--	--	--	--	--	--	--	--	--	3.4E+03	1.5E+03	na	--
Barium	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Benzene [C]	0	--	--	na	5.1E+02	--	--	na	5.1E+03	--	--	--	--	--	--	--	--	--	--	na	5.1E+03
Benzidine[C]	0	--	--	na	2.0E-03	--	--	na	2.0E-02	--	--	--	--	--	--	--	--	--	--	na	2.0E-02
Benzo (a) anthracene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E+00	--	--	--	--	--	--	--	--	--	--	na	1.8E+00
Benzo (b) fluoranthene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E+00	--	--	--	--	--	--	--	--	--	--	na	1.8E+00
Benzo (k) fluoranthene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E+00	--	--	--	--	--	--	--	--	--	--	na	1.8E+00
Benzo (a) pyrene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E+00	--	--	--	--	--	--	--	--	--	--	na	1.8E+00
Bis2-Chloroethyl Ether[C]	0	--	--	na	5.3E+00	--	--	na	5.3E+01	--	--	--	--	--	--	--	--	--	--	na	5.3E+01
Bis2-Chloroisopropyl Ether	0	--	--	na	6.5E+04	--	--	na	6.5E+05	--	--	--	--	--	--	--	--	--	--	na	6.5E+05
Bis 2-Ethylhexyl Phthalate[C]	0	--	--	na	2.2E+01	--	--	na	2.2E+02	--	--	--	--	--	--	--	--	--	--	na	2.2E+02
Bromoform [C]	0	--	--	na	1.4E+03	--	--	na	1.4E+04	--	--	--	--	--	--	--	--	--	--	na	1.4E+04
Butylbenzylphthalate	0	--	--	na	1.9E+03	--	--	na	1.9E+04	--	--	--	--	--	--	--	--	--	--	na	1.9E+04
Cadmium	0	3.2E+00	9.8E-01	na	--	3.2E+01	9.8E+00	na	--	--	--	--	--	--	--	--	--	3.2E+01	9.8E+00	na	--
Carbon Tetrachloride [C]	0	--	--	na	1.6E+01	--	--	na	1.6E+02	--	--	--	--	--	--	--	--	--	--	na	1.6E+02
Chlordane [C]	0	2.4E+00	4.3E-03	na	8.1E-03	2.4E+01	4.3E-02	na	8.1E-02	--	--	--	--	--	--	--	--	2.4E+01	4.3E-02	na	8.1E-02
Chloride	0	8.6E+05	2.3E+05	na	--	8.6E+06	2.3E+06	na	--	--	--	--	--	--	--	--	--	8.6E+06	2.3E+06	na	--
TRC	0	1.9E+01	1.1E+01	na	--	1.9E+02	1.1E+02	na	--	--	--	--	--	--	--	--	--	1.9E+02	1.1E+02	na	--
Chlorobenzene	0	--	--	na	1.6E+03	--	--	na	1.6E+04	--	--	--	--	--	--	--	--	--	--	na	1.6E+04

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorodibromomethane[C]	0	--	--	na	1.3E+02	--	--	na	1.3E+03	--	--	--	--	--	--	--	--	--	--	na	1.3E+03
Chloroform	0	--	--	na	1.1E+04	--	--	na	1.1E+05	--	--	--	--	--	--	--	--	--	--	na	1.1E+05
2-Chloronaphthalene	0	--	--	na	1.6E+03	--	--	na	1.6E+04	--	--	--	--	--	--	--	--	--	--	na	1.6E+04
2-Chlorophenol	0	--	--	na	1.5E+02	--	--	na	1.5E+03	--	--	--	--	--	--	--	--	--	--	na	1.5E+03
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	8.3E-01	4.1E-01	na	--	--	--	--	--	--	--	--	--	8.3E-01	4.1E-01	na	--
Chromium III	0	4.9E+02	6.4E+01	na	--	4.9E+03	6.4E+02	na	--	--	--	--	--	--	--	--	--	4.9E+03	6.4E+02	na	--
Chromium VI	0	1.6E+01	1.1E+01	na	--	1.6E+02	1.1E+02	na	--	--	--	--	--	--	--	--	--	1.6E+02	1.1E+02	na	--
Chromium, Total	0	--	--	1.0E+02	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Chrysene[C]	0	--	--	na	1.8E-02	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Copper	0	1.1E+01	7.6E+00	na	--	1.1E+02	7.6E+01	na	--	--	--	--	--	--	--	--	--	1.1E+02	7.6E+01	na	--
Cyanide, Free	0	2.2E+01	5.2E+00	na	1.6E+04	2.2E+02	5.2E+01	na	1.6E+05	--	--	--	--	--	--	--	--	2.2E+02	5.2E+01	na	1.6E+05
DDD[C]	0	--	--	na	3.1E-03	--	--	na	3.1E-02	--	--	--	--	--	--	--	--	--	--	na	3.1E-02
DDE[C]	0	--	--	na	2.2E-03	--	--	na	2.2E-02	--	--	--	--	--	--	--	--	--	--	na	2.2E-02
DDT[C]	0	1.1E+00	1.0E-03	na	2.2E-03	1.1E+01	1.0E-02	na	2.2E-02	--	--	--	--	--	--	--	--	1.1E+01	1.0E-02	na	2.2E-02
Demeton	0	--	1.0E-01	na	--	--	1.0E+00	na	--	--	--	--	--	--	--	--	--	--	1.0E+00	na	--
Diazinon	0	1.7E-01	1.7E-01	na	--	1.7E+00	1.7E+00	na	--	--	--	--	--	--	--	--	--	1.7E+00	1.7E+00	na	--
Dibenz(a,h)anthracene[C]	0	--	--	na	1.8E-01	--	--	na	1.8E+00	--	--	--	--	--	--	--	--	--	--	na	1.8E+00
1,2-Dichlorobenzene	0	--	--	na	1.3E+03	--	--	na	1.3E+04	--	--	--	--	--	--	--	--	--	--	na	1.3E+04
1,3-Dichlorobenzene	0	--	--	na	9.6E+02	--	--	na	9.6E+03	--	--	--	--	--	--	--	--	--	--	na	9.6E+03
1,4-Dichlorobenzene	0	--	--	na	1.9E+02	--	--	na	1.9E+03	--	--	--	--	--	--	--	--	--	--	na	1.9E+03
3,3-Dichlorobenzidine[C]	0	--	--	na	2.8E-01	--	--	na	2.8E+00	--	--	--	--	--	--	--	--	--	--	na	2.8E+00
Dichlorobromomethane[C]	0	--	--	na	1.7E+02	--	--	na	1.7E+03	--	--	--	--	--	--	--	--	--	--	na	1.7E+03
1,2-Dichloroethane[C]	0	--	--	na	3.7E+02	--	--	na	3.7E+03	--	--	--	--	--	--	--	--	--	--	na	3.7E+03
1,1-Dichloroethylene	0	--	--	na	7.1E+03	--	--	na	7.1E+04	--	--	--	--	--	--	--	--	--	--	na	7.1E+04
1,2-trans-dichloroethylene	0	--	--	na	1.0E+04	--	--	na	1.0E+05	--	--	--	--	--	--	--	--	--	--	na	1.0E+05
2,4-Dichlorophenol	0	--	--	na	2.9E+02	--	--	na	2.9E+03	--	--	--	--	--	--	--	--	--	--	na	2.9E+03
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,2-Dichloropropane[C]	0	--	--	na	1.5E+02	--	--	na	1.5E+03	--	--	--	--	--	--	--	--	--	--	na	1.5E+03
1,3-Dichloropropene[C]	0	--	--	na	2.1E+02	--	--	na	2.1E+03	--	--	--	--	--	--	--	--	--	--	na	2.1E+03
Dieldrin[C]	0	2.4E-01	5.6E-02	na	5.4E-04	2.4E+00	5.6E-01	na	5.4E-03	--	--	--	--	--	--	--	--	2.4E+00	5.6E-01	na	5.4E-03
Diethyl Phthalate	0	--	--	na	4.4E+04	--	--	na	4.4E+05	--	--	--	--	--	--	--	--	--	--	na	4.4E+05
2,4-Dimethylphenol	0	--	--	na	8.5E+02	--	--	na	8.5E+03	--	--	--	--	--	--	--	--	--	--	na	8.5E+03
Dimethyl Phthalate	0	--	--	na	1.1E+06	--	--	na	1.1E+07	--	--	--	--	--	--	--	--	--	--	na	1.1E+07
Di-n-Butyl Phthalate	0	--	--	na	4.5E+03	--	--	na	4.5E+04	--	--	--	--	--	--	--	--	--	--	na	4.5E+04
2,4 Dinitrophenol	0	--	--	na	5.3E+03	--	--	na	5.3E+04	--	--	--	--	--	--	--	--	--	--	na	5.3E+04
2-Methyl-4,6-Dinitrophenol	0	--	--	na	2.8E+02	--	--	na	2.8E+03	--	--	--	--	--	--	--	--	--	--	na	2.8E+03
2,4-Dinitrotoluene[C]	0	--	--	na	3.4E+01	--	--	na	3.4E+02	--	--	--	--	--	--	--	--	--	--	na	3.4E+02
Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin	0	--	--	na	5.1E-08	--	--	na	5.1E-07	--	--	--	--	--	--	--	--	--	--	na	5.1E-07
1,2-Diphenylhydrazine[C]	0	--	--	na	2.0E+00	--	--	na	2.0E+01	--	--	--	--	--	--	--	--	--	--	na	2.0E+01
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E+00	5.6E-01	na	8.9E+02	--	--	--	--	--	--	--	--	2.2E+00	5.6E-01	na	8.9E+02
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E+00	5.6E-01	na	8.9E+02	--	--	--	--	--	--	--	--	2.2E+00	5.6E-01	na	8.9E+02
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	2.2E+00	5.6E-01	--	--	--	--	--	--	--	--	--	--	2.2E+00	5.6E-01	--	--
Endosulfan Sulfate	0	--	--	na	8.9E+01	--	--	na	8.9E+02	--	--	--	--	--	--	--	--	--	--	na	8.9E+02
Endrin	0	8.6E-02	3.6E-02	na	6.0E-02	8.6E-01	3.6E-01	na	6.0E-01	--	--	--	--	--	--	--	--	8.6E-01	3.6E-01	na	6.0E-01
Endrin Aldehyde	0	--	--	na	3.0E-01	--	--	na	3.0E+00	--	--	--	--	--	--	--	--	--	--	na	3.0E+00

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	na	2.1E+03	--	--	na	2.1E+04	--	--	--	--	--	--	--	--	--	--	na	2.1E+04
Fluoranthene	0	--	--	na	1.4E+02	--	--	na	1.4E+03	--	--	--	--	--	--	--	--	--	--	na	1.4E+03
Fluorene	0	--	--	na	5.3E+03	--	--	na	5.3E+04	--	--	--	--	--	--	--	--	--	--	na	5.3E+04
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Heptachlor [C]	0	5.2E-01	3.8E-03	na	7.9E-04	5.2E+00	3.8E-02	na	7.9E-03	--	--	--	--	--	--	--	--	5.2E+00	3.8E-02	na	7.9E-03
Heptachlor Epoxide [C]	0	5.2E-01	3.8E-03	na	3.9E-04	5.2E+00	3.8E-02	na	3.9E-03	--	--	--	--	--	--	--	--	5.2E+00	3.8E-02	na	3.9E-03
Hexachlorobenzene [C]	0	--	--	na	2.9E-03	--	--	na	2.9E-02	--	--	--	--	--	--	--	--	--	--	na	2.9E-02
Hexachlorobutadiene [C]	0	--	--	na	1.8E+02	--	--	na	1.8E+03	--	--	--	--	--	--	--	--	--	--	na	1.8E+03
Hexachlorocyclohexane Alpha-BHC [C]	0	--	--	na	4.9E-02	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Hexachlorocyclohexane Beta-BHC [C]	0	--	--	na	1.7E-01	--	--	na	1.7E+00	--	--	--	--	--	--	--	--	--	--	na	1.7E+00
Hexachlorocyclohexane Gamma-BHC [C] (Lindane)	0	9.5E-01	na	na	1.8E+00	9.5E+00	--	na	1.8E+01	--	--	--	--	--	--	--	--	9.5E+00	--	na	1.8E+01
Hexachlorocyclopentadiene	0	--	--	na	1.1E+03	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	--	--	na	1.1E+04
Hexachloroethane [C]	0	--	--	na	3.3E+01	--	--	na	3.3E+02	--	--	--	--	--	--	--	--	--	--	na	3.3E+02
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	2.0E+01	na	--	--	--	--	--	--	--	--	--	--	2.0E+01	na	--
Indeno (1,2,3-cd) pyrene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E+00	--	--	--	--	--	--	--	--	--	--	na	1.8E+00
Iron	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Isophorone [C]	0	--	--	na	9.6E+03	--	--	na	9.6E+04	--	--	--	--	--	--	--	--	--	--	na	9.6E+04
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Lead	0	9.4E+01	1.1E+01	na	--	9.4E+02	1.1E+02	na	--	--	--	--	--	--	--	--	--	9.4E+02	1.1E+02	na	--
Malathion	0	--	1.0E-01	na	--	--	1.0E+00	na	--	--	--	--	--	--	--	--	--	--	1.0E+00	na	--
Manganese	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Mercury	0	1.4E+00	7.7E-01	--	--	1.4E+01	7.7E+00	--	--	--	--	--	--	--	--	--	--	1.4E+01	7.7E+00	--	--
Methyl Bromide	0	--	--	na	1.5E+03	--	--	na	1.5E+04	--	--	--	--	--	--	--	--	--	--	na	1.5E+04
Methylene Chloride [C]	0	--	--	na	5.9E+03	--	--	na	5.9E+04	--	--	--	--	--	--	--	--	--	--	na	5.9E+04
Methoxychlor	0	--	3.0E-02	na	--	--	3.0E-01	na	--	--	--	--	--	--	--	--	--	--	3.0E-01	na	--
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Nickel	0	1.6E+02	1.7E+01	na	4.6E+03	1.6E+03	1.7E+02	na	4.6E+04	--	--	--	--	--	--	--	--	1.6E+03	1.7E+02	na	4.6E+04
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Nitrobenzene	0	--	--	na	6.9E+02	--	--	na	6.9E+03	--	--	--	--	--	--	--	--	--	--	na	6.9E+03
N-Nitrosodimethylamine [C]	0	--	--	na	3.0E+01	--	--	na	3.0E+02	--	--	--	--	--	--	--	--	--	--	na	3.0E+02
N-Nitrosodiphenylamine [C]	0	--	--	na	6.0E+01	--	--	na	6.0E+02	--	--	--	--	--	--	--	--	--	--	na	6.0E+02
N-Nitrosodi-n-propylamine [C]	0	--	--	na	5.1E+00	--	--	na	5.1E+01	--	--	--	--	--	--	--	--	--	--	na	5.1E+01
Nonylphenol	0	2.8E+01	6.6E+00	--	--	2.8E+02	6.6E+01	na	--	--	--	--	--	--	--	--	--	2.8E+02	6.6E+01	na	--
Parathion	0	6.5E-02	1.3E-02	na	--	6.5E-01	1.3E-01	na	--	--	--	--	--	--	--	--	--	6.5E-01	1.3E-01	na	--
PCB Total [C]	0	--	1.4E-02	na	6.4E-04	--	1.4E-01	na	6.4E-03	--	--	--	--	--	--	--	--	--	1.4E-01	na	6.4E-03
Pentachlorophenol [C]	0	7.7E-03	5.9E-03	na	3.0E+01	7.7E-02	5.9E-02	na	3.0E+02	--	--	--	--	--	--	--	--	7.7E-02	5.9E-02	na	3.0E+02
Phenol	0	--	--	na	8.6E+05	--	--	na	8.6E+06	--	--	--	--	--	--	--	--	--	--	na	8.6E+06
Pyrene	0	--	--	na	4.0E+03	--	--	na	4.0E+04	--	--	--	--	--	--	--	--	--	--	na	4.0E+04
Radionuclides	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Gross Alpha Activity (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Beta and Photon Activity (mrem/yr)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Radium 226 + 228 (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Uranium (ug/l)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	na	4.2E+03	2.0E+02	5.0E+01	na	4.2E+04	--	--	--	--	--	--	--	--	**2.0E+02**	**5.0E+01**	**na**	**4.2E+04**
Silver	0	2.5E+00	--	na	--	2.5E+01	--	na	--	--	--	--	--	--	--	--	--	**2.5E+01**	**--**	**na**	**--**
Sulfate	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
1,1,2,2-Tetrachloroethane[C]	0	--	--	na	4.0E+01	--	--	na	4.0E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.0E+02**
Tetrachloroethylene[C]	0	--	--	na	3.3E+01	--	--	na	3.3E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.3E+02**
Thallium	0	--	--	na	4.7E-01	--	--	na	4.7E+00	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.7E+00**
Toluene	0	--	--	na	6.0E+03	--	--	na	6.0E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.0E+04**
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Toxaphene[C]	0	7.3E-01	2.0E-04	na	2.8E-03	7.3E+00	2.0E-03	na	2.8E-02	--	--	--	--	--	--	--	--	**7.3E+00**	**2.0E-03**	**na**	**2.8E-02**
Tributyltin	0	4.6E-01	7.2E-02	na	--	4.6E+00	7.2E-01	na	--	--	--	--	--	--	--	--	--	**4.6E+00**	**7.2E-01**	**na**	**--**
1,2,4-Trichlorobenzene	0	--	--	na	7.0E+01	--	--	na	7.0E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**7.0E+02**
1,1,2-Trichloroethane[C]	0	--	--	na	1.6E+02	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.6E+03**
Trichloroethylene[C]	0	--	--	na	3.0E+02	--	--	na	3.0E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.0E+03**
2,4,6-Trichlorophenol[C]	0	--	--	na	2.4E+01	--	--	na	2.4E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.4E+02**
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Vinyl Chloride[C]	0	--	--	na	2.4E+01	--	--	na	2.4E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.4E+02**
Zinc	0	1.0E+02	1.0E+02	na	2.6E+04	1.0E+03	1.0E+03	na	2.6E+05	--	--	--	--	--	--	--	--	**1.0E+03**	**1.0E+03**	**na**	**2.6E+05**

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information. Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)
Antimony	6.4E+03
Arsenic	9.0E+02
Barium	na
Cadmium	5.9E+00
Chromium III	3.8E+02
Chromium VI	6.4E+01
Copper	4.5E+01
Iron	na
Lead	6.4E+01
Manganese	na
Mercury	4.6E+00
Nickel	1.0E+02
Selenium	3.0E+01
Silver	1.0E+01
Zinc	4.0E+02

Note: do not use QL's lower than the minimum QL's provided in agency guidance

FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Fairfax Water Griffith WTP Outfalls 007 and 008 Permit No.: VA0002585

Receiving Stream: Occoquan Reservoir (between high dam and low dam) Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information		Stream Flows		Mixing Information		Effluent Information	
Mean Hardness (as CaCO3) =	84 mg/L	1Q10 (Annual) =	0 MGD	Annual - 1Q10 Mix =	100 %	Mean Hardness (as CaCO3) =	72.3 mg/L
90% Temperature (Annual) =	22.17 deg C	7Q10 (Annual) =	0 MGD	- 7Q10 Mix =	100 %	90% Temp (Annual) =	20 deg C
90% Temperature (Wet season) =	15 deg C	30Q10 (Annual) =	0 MGD	- 30Q10 Mix =	100 %	90% Temp (Wet season) =	15 deg C
90% Maximum pH =	7.84 SU	1Q10 (Wet season) =	0 MGD	Wet Season - 1Q10 Mix =	100 %	90% Maximum pH =	7.6 SU
10% Maximum pH =	SU	30Q10 (Wet season)	0 MGD	- 30Q10 Mix =	100 %	10% Maximum pH =	SU
Tier Designation (1 or 2) =	1	30Q5 =	0 MGD			Discharge Flow =	0.007 MGD
Public Water Supply (PWS) Y/N? =	n	Harmonic Mean =	0 MGD				
Trout Present Y/N? =	n						
Early Life Stages Present Y/N? =	y						

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Acenapthene	0	--	--	na	9.9E+02	--	--	na	9.9E+02	--	--	--	--	--	--	--	--	--	--	na	9.9E+02
Acrolein	0	--	--	na	9.3E+00	--	--	na	9.3E+00	--	--	--	--	--	--	--	--	--	--	na	9.3E+00
Acrylonitrile[C]	0	--	--	na	2.5E+00	--	--	na	2.5E+00	--	--	--	--	--	--	--	--	--	--	na	2.5E+00
Aldrin [C]	0	3.0E+00	--	na	5.0E-04	3.0E+00	--	na	5.0E-04	--	--	--	--	--	--	--	--	3.0E+00	--	na	5.0E-04
Ammonia-N (mg/l) (Yearly)	0	1.70E+01	2.79E+00	na	--	1.70E+01	2.79E+00	na	--	--	--	--	--	--	--	--	--	1.70E+01	2.79E+00	na	--
Ammonia-N (mg/l) (High Flow)	0	1.70E+01	3.85E+00	na	--	1.70E+01	3.85E+00	na	--	--	--	--	--	--	--	--	--	1.70E+01	3.85E+00	na	--
Anthracene	0	--	--	na	4.0E+04	--	--	na	4.0E+04	--	--	--	--	--	--	--	--	--	--	na	4.0E+04
Antimony	0	--	--	na	6.4E+02	--	--	na	6.4E+02	--	--	--	--	--	--	--	--	--	--	na	6.4E+02
Arsenic	o	3.4E+02	1.5E+02	na	--	3.4E+02	1.5E+02	na	--	--	--	--	--	--	--	--	--	3.4E+02	1.5E+02	na	--
Barium	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Benzene [C]	0	--	--	na	5.1E+02	--	--	na	5.1E+02	--	--	--	--	--	--	--	--	--	--	na	5.1E+02
Benzidine[C]	0	--	--	na	2.0E-03	--	--	na	2.0E-03	--	--	--	--	--	--	--	--	--	--	na	2.0E-03
Benzo (a) anthracene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Benzo (b) fluoranthene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Benzo (k) fluoranthene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Benzo (a) pyrene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Bis2-Chloroethyl Ether[C]	0	--	--	na	5.3E+00	--	--	na	5.3E+00	--	--	--	--	--	--	--	--	--	--	na	5.3E+00
Bis2-Chloroisopropyl Ether	0	--	--	na	6.5E+04	--	--	na	6.5E+04	--	--	--	--	--	--	--	--	--	--	na	6.5E+04
Bis 2-Ethylhexyl Phthalate [C]	0	--	--	na	2.2E+01	--	--	na	2.2E+01	--	--	--	--	--	--	--	--	--	--	na	2.2E+01
Bromoform [C]	0	--	--	na	1.4E+03	--	--	na	1.4E+03	--	--	--	--	--	--	--	--	--	--	na	1.4E+03
Butylbenzylphthalate	0	--	--	na	1.9E+03	--	--	na	1.9E+03	--	--	--	--	--	--	--	--	--	--	na	1.9E+03
Cadmium	0	2.7E+00	8.8E-01	na	--	2.7E+00	8.8E-01	na	--	--	--	--	--	--	--	--	--	2.7E+00	8.8E-01	na	--
Carbon Tetrachloride [C]	0	--	--	na	1.6E+01	--	--	na	1.6E+01	--	--	--	--	--	--	--	--	--	--	na	1.6E+01
Chlordane [C]	0	2.4E+00	4.3E-03	na	8.1E-03	2.4E+00	4.3E-03	na	8.1E-03	--	--	--	--	--	--	--	--	2.4E+00	4.3E-03	na	8.1E-03
Chloride	0	8.6E+05	2.3E+05	na	--	8.6E+05	2.3E+05	na	--	--	--	--	--	--	--	--	--	8.6E+05	2.3E+05	na	--
TRC	0	1.9E+01	1.1E+01	na	--	1.9E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.9E+01	1.1E+01	na	--
Chlorobenzene	0	--	--	na	1.6E+03	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	--	--	na	1.6E+03

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorodibromomethane[C]	0	--	--	na	1.3E+02	--	--	na	1.3E+02	--	--	--	--	--	--	--	--	--	--	na	1.3E+02
Chloroform	0	--	--	na	1.1E+04	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	--	--	na	1.1E+04
2-Chloronaphthalene	0	--	--	na	1.6E+03	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	--	--	na	1.6E+03
2-Chlorophenol	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	--	--	--	--	--	--	--	--	na	1.5E+02
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	8.3E-02	4.1E-02	na	--	--	--	--	--	--	--	--	--	8.3E-02	4.1E-02	na	--
Chromium III	0	4.4E+02	5.7E+01	na	--	4.4E+02	5.7E+01	na	--	--	--	--	--	--	--	--	--	4.4E+02	5.7E+01	na	--
Chromium VI	0	1.6E+01	1.1E+01	na	--	1.6E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.6E+01	1.1E+01	na	--
Chromium, Total	0	--	--	1.0E+02	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Chrysene[C]	0	--	--	na	1.8E-02	--	--	na	1.8E-02	--	--	--	--	--	--	--	--	--	--	na	1.8E-02
Copper	0	9.9E+00	6.8E+00	na	--	9.9E+00	6.8E+00	na	--	--	--	--	--	--	--	--	--	9.9E+00	6.8E+00	na	--
Cyanide, Free	0	2.2E+01	5.2E+00	na	1.6E+04	2.2E+01	5.2E+00	na	1.6E+04	--	--	--	--	--	--	--	--	2.2E+01	5.2E+00	na	1.6E+04
DDD[C]	0	--	--	na	3.1E-03	--	--	na	3.1E-03	--	--	--	--	--	--	--	--	--	--	na	3.1E-03
DDE[C]	0	--	--	na	2.2E-03	--	--	na	2.2E-03	--	--	--	--	--	--	--	--	--	--	na	2.2E-03
DDT[C]	0	1.1E+00	1.0E-03	na	2.2E-03	1.1E+00	1.0E-03	na	2.2E-03	--	--	--	--	--	--	--	--	1.1E+00	1.0E-03	na	2.2E-03
Demeton	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Diazinon	0	1.7E-01	1.7E-01	na	--	1.7E-01	1.7E-01	na	--	--	--	--	--	--	--	--	--	1.7E-01	1.7E-01	na	--
Dibenz(a,h)anthracene[C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
1,2-Dichlorobenzene	0	--	--	na	1.3E+03	--	--	na	1.3E+03	--	--	--	--	--	--	--	--	--	--	na	1.3E+03
1,3-Dichlorobenzene	0	--	--	na	9.6E+02	--	--	na	9.6E+02	--	--	--	--	--	--	--	--	--	--	na	9.6E+02
1,4-Dichlorobenzene	0	--	--	na	1.9E+02	--	--	na	1.9E+02	--	--	--	--	--	--	--	--	--	--	na	1.9E+02
3,3-Dichlorobenzidine[C]	0	--	--	na	2.8E-01	--	--	na	2.8E-01	--	--	--	--	--	--	--	--	--	--	na	2.8E-01
Dichlorobromomethane[C]	0	--	--	na	1.7E+02	--	--	na	1.7E+02	--	--	--	--	--	--	--	--	--	--	na	1.7E+02
1,2-Dichloroethane[C]	0	--	--	na	3.7E+02	--	--	na	3.7E+02	--	--	--	--	--	--	--	--	--	--	na	3.7E+02
1,1-Dichloroethylene	0	--	--	na	7.1E+03	--	--	na	7.1E+03	--	--	--	--	--	--	--	--	--	--	na	7.1E+03
1,2-trans-dichloroethylene	0	--	--	na	1.0E+04	--	--	na	1.0E+04	--	--	--	--	--	--	--	--	--	--	na	1.0E+04
2,4-Dichlorophenol	0	--	--	na	2.9E+02	--	--	na	2.9E+02	--	--	--	--	--	--	--	--	--	--	na	2.9E+02
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,2-Dichloropropane[C]	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	--	--	--	--	--	--	--	--	na	1.5E+02
1,3-Dichloropropene[C]	0	--	--	na	2.1E+02	--	--	na	2.1E+02	--	--	--	--	--	--	--	--	--	--	na	2.1E+02
Dieldrin[C]	0	2.4E-01	5.6E-02	na	5.4E-04	2.4E-01	5.6E-02	na	5.4E-04	--	--	--	--	--	--	--	--	2.4E-01	5.6E-02	na	5.4E-04
Diethyl Phthalate	0	--	--	na	4.4E+04	--	--	na	4.4E+04	--	--	--	--	--	--	--	--	--	--	na	4.4E+04
2,4-Dimethylphenol	0	--	--	na	8.5E+02	--	--	na	8.5E+02	--	--	--	--	--	--	--	--	--	--	na	8.5E+02
Dimethyl Phthalate	0	--	--	na	1.1E+06	--	--	na	1.1E+06	--	--	--	--	--	--	--	--	--	--	na	1.1E+06
Di-n-Butyl Phthalate	0	--	--	na	4.5E+03	--	--	na	4.5E+03	--	--	--	--	--	--	--	--	--	--	na	4.5E+03
2,4 Dinitrophenol	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	--	--	--	--	--	--	--	--	na	5.3E+03
2-Methyl-4,6-Dinitrophenol	0	--	--	na	2.8E+02	--	--	na	2.8E+02	--	--	--	--	--	--	--	--	--	--	na	2.8E+02
2,4-Dinitrotoluene[C]	0	--	--	na	3.4E+01	--	--	na	3.4E+01	--	--	--	--	--	--	--	--	--	--	na	3.4E+01
Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin	0	--	--	na	5.1E-08	--	--	na	5.1E-08	--	--	--	--	--	--	--	--	--	--	na	5.1E-08
1,2-Diphenylhydrazine[C]	0	--	--	na	2.0E+00	--	--	na	2.0E+00	--	--	--	--	--	--	--	--	--	--	na	2.0E+00
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	8.9E+01
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	8.9E+01
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	2.2E-01	5.6E-02	--	--	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	--	--
Endosulfan Sulfate	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	--	--	--	--	na	8.9E+01
Endrin	0	8.6E-02	3.6E-02	na	6.0E-02	8.6E-02	3.6E-02	na	6.0E-02	--	--	--	--	--	--	--	--	8.6E-02	3.6E-02	na	6.0E-02
Endrin Aldehyde	0	--	--	na	3.0E-01	--	--	na	3.0E-01	--	--	--	--	--	--	--	--	--	--	na	3.0E-01

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	na	2.1E+03	--	--	na	2.1E+03	--	--	--	--	--	--	--	--	--	--	na	2.1E+03
Fluoranthene	0	--	--	na	1.4E+02	--	--	na	1.4E+02	--	--	--	--	--	--	--	--	--	--	na	1.4E+02
Fluorene	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	--	--	--	--	--	--	--	--	na	5.3E+03
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	--	1.0E-02	na	--	--	--	--	--	--	--	--	--	--	1.0E-02	na	--
Heptachlor [C]	0	5.2E-01	3.8E-03	na	7.9E-04	5.2E-01	3.8E-03	na	7.9E-04	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	7.9E-04
Heptachlor Epoxide [C]	0	5.2E-01	3.8E-03	na	3.9E-04	5.2E-01	3.8E-03	na	3.9E-04	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	3.9E-04
Hexachlorobenzene [C]	0	--	--	na	2.9E-03	--	--	na	2.9E-03	--	--	--	--	--	--	--	--	--	--	na	2.9E-03
Hexachlorobutadiene [C]	0	--	--	na	1.8E+02	--	--	na	1.8E+02	--	--	--	--	--	--	--	--	--	--	na	1.8E+02
Hexachlorocyclohexane Alpha-BHC [C]	0	--	--	na	4.9E-02	--	--	na	4.9E-02	--	--	--	--	--	--	--	--	--	--	na	4.9E-02
Hexachlorocyclohexane Beta-BHC [C]	0	--	--	na	1.7E-01	--	--	na	1.7E-01	--	--	--	--	--	--	--	--	--	--	na	1.7E-01
Hexachlorocyclohexane Gamma-BHC [C] (Lindane)	0	9.5E-01	na	na	1.8E+00	9.5E-01	--	na	1.8E+00	--	--	--	--	--	--	--	--	9.5E-01	--	na	1.8E+00
Hexachlorocyclopentadiene	0	--	--	na	1.1E+03	--	--	na	1.1E+03	--	--	--	--	--	--	--	--	--	--	na	1.1E+03
Hexachloroethane [C]	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	--	--	--	--	--	--	--	--	na	3.3E+01
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	2.0E+00	na	--	--	--	--	--	--	--	--	--	--	2.0E+00	na	--
Indeno (1,2,3-cd) pyrene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Iron	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Isophorone [C]	0	--	--	na	9.6E+03	--	--	na	9.6E+03	--	--	--	--	--	--	--	--	--	--	na	9.6E+03
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Lead	0	7.9E+01	8.9E+00	na	--	7.9E+01	8.9E+00	na	--	--	--	--	--	--	--	--	--	7.9E+01	8.9E+00	na	--
Malathion	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Manganese	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Mercury	0	1.4E+00	7.7E-01	--	--	1.4E+00	7.7E-01	--	--	--	--	--	--	--	--	--	--	1.4E+00	7.7E-01	--	--
Methyl Bromide	0	--	--	na	1.5E+03	--	--	na	1.5E+03	--	--	--	--	--	--	--	--	--	--	na	1.5E+03
Methylene Chloride [C]	0	--	--	na	5.9E+03	--	--	na	5.9E+03	--	--	--	--	--	--	--	--	--	--	na	5.9E+03
Methoxychlor	0	--	3.0E-02	na	--	--	3.0E-02	na	--	--	--	--	--	--	--	--	--	--	3.0E-02	na	--
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Nickel	0	1.4E+02	1.5E+01	na	4.6E+03	1.4E+02	1.5E+01	na	4.6E+03	--	--	--	--	--	--	--	--	1.4E+02	1.5E+01	na	4.6E+03
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Nitrobenzene	0	--	--	na	6.9E+02	--	--	na	6.9E+02	--	--	--	--	--	--	--	--	--	--	na	6.9E+02
N-Nitrosodimethylamine [C]	0	--	--	na	3.0E+01	--	--	na	3.0E+01	--	--	--	--	--	--	--	--	--	--	na	3.0E+01
N-Nitrosodiphenylamine [C]	0	--	--	na	6.0E+01	--	--	na	6.0E+01	--	--	--	--	--	--	--	--	--	--	na	6.0E+01
N-Nitrosodi-n-propylamine [C]	0	--	--	na	5.1E+00	--	--	na	5.1E+00	--	--	--	--	--	--	--	--	--	--	na	5.1E+00
Nonylphenol	0	2.8E+01	6.6E+00	--	--	2.8E+01	6.6E+00	na	--	--	--	--	--	--	--	--	--	2.8E+01	6.6E+00	na	--
Parathion	0	6.5E-02	1.3E-02	na	--	6.5E-02	1.3E-02	na	--	--	--	--	--	--	--	--	--	6.5E-02	1.3E-02	na	--
PCB Total [C]	0	--	1.4E-02	na	6.4E-04	--	1.4E-02	na	6.4E-04	--	--	--	--	--	--	--	--	--	1.4E-02	na	6.4E-04
Pentachlorophenol [C]	0	7.7E-03	5.9E-03	na	3.0E+01	7.7E-03	5.9E-03	na	3.0E+01	--	--	--	--	--	--	--	--	7.7E-03	5.9E-03	na	3.0E+01
Phenol	0	--	--	na	8.6E+05	--	--	na	8.6E+05	--	--	--	--	--	--	--	--	--	--	na	8.6E+05
Pyrene	0	--	--	na	4.0E+03	--	--	na	4.0E+03	--	--	--	--	--	--	--	--	--	--	na	4.0E+03
Radionuclides	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Gross Alpha Activity (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Beta and Photon Activity (mrem/yr)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Radium 226 + 228 (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Uranium (ug/l)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	na	4.2E+03	2.0E+01	5.0E+00	na	4.2E+03	--	--	--	--	--	--	--	--	**2.0E+01**	**5.0E+00**	**na**	**4.2E+03**
Silver	0	2.0E+00	--	na	--	2.0E+00	--	na	--	--	--	--	--	--	--	--	--	**2.0E+00**	**--**	**na**	**--**
Sulfate	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
1,1,2,2-Tetrachloroethane[C]	0	--	--	na	4.0E+01	--	--	na	4.0E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.0E+01**
Tetrachloroethylene[C]	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.3E+01**
Thallium	0	--	--	na	4.7E-01	--	--	na	4.7E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.7E-01**
Toluene	0	--	--	na	6.0E+03	--	--	na	6.0E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.0E+03**
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Toxaphene [C]	0	7.3E-01	2.0E-04	na	2.8E-03	7.3E-01	2.0E-04	na	2.8E-03	--	--	--	--	--	--	--	--	**7.3E-01**	**2.0E-04**	**na**	**2.8E-03**
Tributyltin	0	4.6E-01	7.2E-02	na	--	4.6E-01	7.2E-02	na	--	--	--	--	--	--	--	--	--	**4.6E-01**	**7.2E-02**	**na**	**--**
1,2,4-Trichlorobenzene	0	--	--	na	7.0E+01	--	--	na	7.0E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**7.0E+01**
1,1,2-Trichloroethane[C]	0	--	--	na	1.6E+02	--	--	na	1.6E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.6E+02**
Trichloroethylene [C]	0	--	--	na	3.0E+02	--	--	na	3.0E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.0E+02**
2,4,6-Trichlorophenol [C]	0	--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.4E+01**
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Vinyl Chloride[C]	0	--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.4E+01**
Zinc	0	8.9E+01	9.0E+01	na	2.6E+04	8.9E+01	9.0E+01	na	2.6E+04	--	--	--	--	--	--	--	--	**8.9E+01**	**9.0E+01**	**na**	**2.6E+04**

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
   Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)
Antimony	6.4E+02
Arsenic	9.0E+01
Barium	na
Cadmium	5.3E-01
Chromium III	3.4E+01
Chromium VI	6.4E+00
Copper	4.0E+00
Iron	na
Lead	5.4E+00
Manganese	na
Mercury	4.6E-01
Nickel	9.2E+00
Selenium	3.0E+00
Silver	7.9E-01
Zinc	3.6E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

Occoquan River Field Data January 2000 through February 2003

Field pH	Field Temperature
7.8	11.7
7.36	20.2
7.02	21.09
7.21	17.23
7.25	10.57
7.09	9.27
8.2	14.53
6.49	22.87
7.57	8.71
6.93	22.17
	5.35
90th percentile values 7.84 S.U.	22.17 degrees Celsius

pH Data for Outfall 001

First quarter 2010	7.2 SU
Second quarter 2010	8.2 SU
Third quarter 2010	8 SU
Fourth quarter 2010	7.5 SU
First quarter 2011	7.4 SU
Second quarter 2011	7.8 SU
Third quarter 2011	7.6 SU
Fourth quarter 2011	7.5 SU
First quarter 2012	7.3 SU
Second quarter 2012	7.5 SU
Third quarter 2012	7.8 SU
Fourth quarter 2012	7.5 SU
First quarter 2013	7.4 SU
Second quarter 2013	7.5 SU
Third quarter 2013	7.7 SU
Fourth quarter 2013	7.7 SU
First quarter 2014	7.4 SU
Second quarter 2014	7.8 SU
Third quarter 2014	7.7 SU
Fourth quarter 2014	7.9 SU
First quarter 2015	7.3 SU
Second quarter 2015	7.9 SU
	7.9 SU

ATTACHMENT 10

8/25/2015 7:22:25 AM

Facility = Griffith WTP
Chemical = Copper Outfall 001
Chronic averaging period = 4
WLAa = 110
WLAc = 76
Q.L. = 1
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 17
Variance = 104.04
C.V. = 0.6
97th percentile daily values = 41.3680
97th percentile 4 day average = 28.2844
97th percentile 30 day average= 20.5029
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are:

17

8/25/2015 7:23:05 AM

Facility = Griffith WTP
Chemical = Zinc Outfall 001
Chronic averaging period = 4
WLAa = 1000
WLAc = 1000
Q.L. = 2
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 12
Variance = 51.84
C.V. = 0.6
97th percentile daily values = 29.2010
97th percentile 4 day average = 19.9654
97th percentile 30 day average= 14.4726
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are:

12

8/25/2015 7:28:45 AM

Facility = Griffith WTP
Chemical = Copper Outfall 007
Chronic averaging period = 4
WLAa = 9.9
WLAc = 6.8
Q.L. = 1
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 2
Variance = 1.44
C.V. = 0.6
97th percentile daily values = 4.86683
97th percentile 4 day average = 3.32758
97th percentile 30 day average= 2.41210
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are:

2

8/25/2015 7:29:34 AM

Facility = Griffith WTP
Chemical = Zinc Outfall 007
Chronic averaging period = 4
WLAa = 89
WLAc = 90
Q.L. = 5
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 6
Variance = 12.96
C.V. = 0.6
97th percentile daily values = 14.6005
97th percentile 4 day average = 9.98274
97th percentile 30 day average= 7.23631
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are:

6

8/25/2015 7:52:35 AM

Facility = Griffith WTP
Chemical = Copper Outfall 008
Chronic averaging period = 4
WLAa = 9.9
WLAc = 6.8
Q.L. = 2
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 6
Variance = 12.96
C.V. = 0.6
97th percentile daily values = 14.6005
97th percentile 4 day average = 9.98274
97th percentile 30 day average= 7.23631
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Acute Toxicity
Maximum Daily Limit = 9.9
Average Weekly limit = 9.9
Average Monthly LImit = 9.9

The data are:

8/25/2015 7:33:11 AM

Facility = Griffith WTP
Chemical = Copper Outfall 009
Chronic averaging period = 4
WLAa = 110
WLAc = 76
Q.L. = 2
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 15
Variance = 81
C.V. = 0.6
97th percentile daily values = 36.5012
97th percentile 4 day average = 24.9568
97th percentile 30 day average= 18.0907
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are:

15

8/25/2015 7:32:49 AM

Facility = Griffith WTP
Chemical = Zinc Outfall 009
Chronic averaging period = 4
WLAa = 1000
WLAc = 1000
Q.L. = 5
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 10
Variance = 36
C.V. = 0.6
97th percentile daily values = 24.3341
97th percentile 4 day average = 16.6379
97th percentile 30 day average= 12.0605
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are:

10

ATTACHMENT 11

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY
Northern Regional Office
13901 Crown Court **Woodbridge, VA 22193** **(703) 583-3800**

SUBJECT: TOXICS MANAGEMENT PROGRAM (TMP) DATA REVIEW
Lorton (Griffith) Water Treatment Plant (VA0002585)
REVIEWER: Douglas Frasier
DATE: 27 May 2015

PREVIOUS REVIEW: 8 July 2014

DATA REVIEWED:

This review covers chronic tests conducted in March 2015 for Outfall 001.

DISCUSSION:

The results of these toxicity tests along with the results from previous toxicity tests are summarized in Table 1 (acute) and Table 2 (chronic).

The chronic toxicity of the effluent samples was determined with a 3-brood static daily renewal survival and reproduction chronic test using *C. dubia* as the test species and a 7-day daily renewal larval survival and growth test using *P. promelas* as the test species.

The tests were changed from acute to chronic during the 2010 reissuance based on the reported flow from the water plant. The tests yielded a NOEC of 100% effluent for *P. promelas* and 100% for *C. dubia*; thus, meeting the test criteria as stated in the permit.

CONCLUSION:

The chronic toxicity tests are valid and the results are acceptable. The test results indicate that the effluent samples exhibit no chronic toxicity for the test species.

BIOMONITORING RESULTS
FCWA – Griffith Water Treatment Plant (VA0002585)

Table 1
Summary of Acute Toxicity Test Results for Outfall 001

TEST DATE	TEST TYPE/ORGANISM	48-H LC_{50} (%)	% SURV	TU_a	REMARK
12/01/05	Acute *C. dubia*	>100	100	1	1st quarterly
12/01/05	Acute *P. promelas*	>100	95	1	
03/01/06	Acute *C. dubia*	**39.5**	**0**	4	2nd quarterly
03/01/06	Acute *P. promelas*	**90.6**	**35**	2	
06/07/06	Acute *C. dubia*	>100	100	1	3rd quarterly
06/07/06	Acute *P. promelas*	>100	100	1	
09/13/06	Acute *C. dubia*	>100	100	1	4th quarterly
09/13/06	Acute *P. promelas*	>100	100	1	
12/13/06	Acute *C. dubia*	>100	100	1	5th quarterly
12/13/06	Acute *P. promelas*	>100	100	1	
03/14/07	Acute *C. dubia*	>100	100	1	6th quarterly
03/14/07	Acute *P. promelas*	>100	100	1	
05/16/07	Acute *C. dubia*	>100	100	1	7th quarterly
05/16/07	Acute *P. promelas*	>100	100	1	
08/08/07	Acute *C. dubia*	>100	100	1	8th quarterly
08/08/07	Acute *P. promelas*	>100	95	1	
11/07/07	Acute *C. dubia*	>100	100	1	9th quarterly
11/07/07	Acute *P. promelas*	>100	100	1	
02/06/08	Acute *C. dubia*	>100	100	1	2nd annual
02/06/08	Acute *P. promelas*	>100	100	1	
02/13/09	Acute *C. dubia*	>100	100	1	3rd annual
02/13/09	Acute *P. promelas*	>100	100	1	
03/12/10	Acute *C. dubia*	>100	100	1	4th annual
03/12/10	Acute *P. promelas*	>100	100	1	

Table 2
Summary of Chronic Toxicity Test Results for Outfall 001

TEST DATE	TEST TYPE/ORGANISM	48-h LC_{50} (%)	IC_{25} (%)	NOEC (%)	% SURV	TU_c	LAB	REMARKS
Permit Reissued 17 August 2010								
03/22/11	Chronic *C. dubia*	>100	>100	100 SR	100	1	Reed	1st annual
03/22/11	Chronic *P. promelas*	>100	>100	100 SG	97.5	1		
03/06/12	Chronic *C. dubia*	>100	>100	100 SR	100	1	Reed	2nd annual
03/06/12	Chronic *P. promelas*	>100	>100	100 SG	100	1		
03/19/13	Chronic *C. dubia*	>100	45.8	**69 S <47 R**	40	>2.13	Reed	3rd annual
03/19/13	Chronic *P. promelas*	>100	>100	100 SG	97.5	1		
04/23/13	Chronic *C. dubia*	>100	>100	100 SR	100	1	Reed	Retest
03/25/14	Chronic *C. dubia*	>100	83.1	100 S 69 R	90	1.44	Reed	4th annual
03/25/14	Chronic *P. promelas*	>100	>100	100 SG	100	1		
03/31/15	Chronic *C. dubia*	>100	>100	100 SR	100	1	Reed	
03/31/15	Chronic *P. promelas*	>100	>100	100 SG	100	1		

FOOTNOTES:

Boldfaced value indicates that the test failed the toxicity criterion.

ABBREVIATIONS:

S – Survival; G – Growth; R – Reproduction
% SURV – Percent survival in 100% effluent

Spreadsheet for determination of WET test endpoints or WET limits

Excel 97
Revision Date: 12/13/13
File: WETLIM10.xls
(MIX.EXE required also)

Enter data in the cells with blue type:

Entry Date:	08/31/15
Facility Name:	Griffith WTP
VPDES Number:	VA0002585
Outfall Number:	1

Plant Flow:	5.6	MGD	
Acute 1Q10:	0	MGD	100 %
Chronic 7Q10:	0	MGD	100 %

Are data available to calculate CV? (Y/N) N (Minimum of 10 data points, same species, needed) Go to Page 2
Are data available to calculate ACR? (Y/N) N (NOEC<LC50, do not use greater/less than data) Go to Page 3

IWC_a	100 %	Plant flow/plant flow + 1Q10	
IWC_c	100 %	Plant flow/plant flow + 7Q10	
Dilution, acute	1	100/IWCa	
Dilution, chronic	1	100/IWCc	
WLA_a	0.3	Instream criterion (0.3 TUa) X's Dilution, acute	
WLA_c	1	Instream criterion (1.0 TUc) X's Dilution, chronic	
$WLA_{a,c}$	3	ACR X's WLA_a - converts acute WLA to chronic units	
ACR -acute/chronic ratio	10	LC50/NOEC (Default is 10 - if data are available, use tables Page 3)	
CV-Coefficient of variation	0.6	Default of 0.6 - if data are available, use tables Page 2)	
Constants eA	0.4109447	Default = 0.41	
eB	0.6010373	Default = 0.60	
eC	2.4334175	Default = 2.43	
eD	2.4334175	Default = 2.43 (1 samp)	No. of sample 1
$LTA_{a,c}$	1.2328341	WLAa,c X's eA	
LTA_c	0.6010373	WLAc X's eB	
MDL** with $LTA_{a,c}$	3.000000074	TU_c	NOEC = 33.333333 (Protects from acute/chronic toxicity)
MDL** with LTA_c	1.462574684	TU_c	NOEC = 68.372577 (Protects from chronic toxicity)
AML with lowest LTA	1.462574684	TU_c	NOEC = 68.372577 Lowest LTA X's eD

IF ONLY ACUTE ENDPOINT/LIMIT IS NEEDED, CONVERT MDL FROM TU_c to TU_a

MDL with $LTA_{a,c}$	0.300000007	TU_a	LC50 = 333.333325	%	Use NOAEC=100%
MDL with LTA_c	0.146257468	TU_a	LC50 = 683.725769	%	Use NOAEC=100%

Acute Endpoint/Permit Limit

ACUTE	100% =	NOAEC	LC_{50} =
ACUTE WLAa		0.3	

Use as LC_{50} in Special Condition, as TUa on DMR

LC_{50} = NA % Use as NA TUa

Note: Inform the permittee that if the mean of the data exceeds this TUa: 1.0 a limit may result using STATS.EXE

Chronic Endpoint/Permit Limit

CHRONIC	1.46257468	TU_c	NOEC = 69 % Use as 1.44 TU_c
BOTH*	3.00000007	TU_c	NOEC = 34 % Use as 2.94 TU_c
AML	1.46257468	TU_c	NOEC = 69 % Use as 1.44 TU_c
ACUTE WLAa,c		3	
CHRONIC WLAc		1	

Use as NOEC in Special Condition, as TUc on DMR

Note: Inform the permittee that if the mean of the data exceeds this TUc: 1.0 a limit may result using STATS.EXE

* Both means acute expressed as chronic

% Flow to be used from MIX.EXE

Diffuser /modeling study?

Enter Y/N n
Acute 1 :1
Chronic 1 :1

NOTE: If the IWCa is >33%, specify the NOAEC = 100% test/endpoint for use

**The Maximum Daily Limit is calculated from the lowest LTA, X's eC. The $LTA_{a,c}$ and MDL using it are driven by the ACR.

Rounded NOEC's %
NOEC = 34 %
NOEC = 69 %
NOEC = 69

Rounded LC50's %
LC50 = NA %
LC50 = NA

Page 2 - Follow the directions to develop a site specific CV (coefficient of variation)

IF YOU HAVE AT LEAST 10 DATA POINTS THAT ARE QUANTIFIABLE (NOT "<" OR ">") FOR A SPECIES, ENTER THE DATA IN EITHER COLUMN "G" (VERTEBRATE) OR COLUMN "J" (INVERTEBRATE). THE 'CV' WILL BE PICKED UP FOR THE CALCULATIONS BELOW. THE DEFAULT VALUES FOR eA, eB, AND eC WILL CHANGE IF THE 'CV' IS ANYTHING OTHER THAN 0.6.

Coefficient of Variation for effluent tests

CV = 0.6 (Default 0.6)

δ^2 = 0.3074847

δ = 0.554513029

Using the log variance to develop eA

(P. 100, step 2a of TSD)

Z = 1.881 (97% probability stat from table

A = -0.88929666

eA = 0.410944686

Using the log variance to develop eB

(P. 100, step 2b of TSD)

δ_4^2 = 0.086177696

δ_4 = 0.293560379

B = -0.50909823

eB = 0.601037335

Using the log variance to develop eC

(P. 100, step 4a of TSD)

δ^2 = 0.3074847

δ = 0.554513029

C = 0.889296658

eC = 2.433417525

Using the log variance to develop eD

(P. 100, step 4b of TSD)

n = 1 This number will most likely stay as "1", for 1 sample/month.

δ_n^2 = 0.3074847

δ_n = 0.554513029

D = 0.889296658

eD = 2.433417525

	Vertebrate IC_{25} Data or LC_{50} Data	LN of data	Invertebrate IC_{25} Data or LC_{50} Data	LN of data
	**********		**********	
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
St Dev	NEED DATA	NEED DATA	St Dev	NEED DATA	NEED DATA
Mean	0	0	Mean	0	0
Variance	0	0.000000	Variance	0	0.000000
CV	0		CV	0	

Page 3 - Follow directions to develop a site specific ACR (Acute to Chronic Ratio)

To determine Acute/Chronic Ratio (ACR), insert usable data below. Usable data is defined as valid paired test results, acute and chronic, tested at the same temperature, same species. The chronic NOEC must be less than the acute LC_{50}, since the ACR divides the LC_{50} by the NOEC. LC_{50}'s >100% should not be used.

Table 1. ACR using Vertebrate data

Set #	LC_{50}	NOEC	Test ACR	Logarithm	Geomean	Antilog	ACR to Use
1	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
2	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
3	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
4	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
5	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
6	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
7	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
8	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
9	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
10	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
				ACR for vertebrate data:			0

Table 1. Result:	Vertebrate ACR	0
Table 2. Result:	Invertebrate ACR	0
	Lowest ACR	Default to 10

Table 2. ACR using Invertebrate data

Set #	LC_{50}	NOEC	Test ACR	Logarithm	Geomean	Antilog	ACR to Use
1	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
2	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
3	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
4	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
5	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
6	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
7	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
8	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
9	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
10	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
				ACR for vertebrate data:			0

DILUTION SERIES TO RECOMMEND

Table 4.	Monitoring		Limit	
	% Effluent	TUc	% Effluent	TUc
Dilution series based on data mean	100	1.0		
Dilution series to use for limit			69	1.4492754
Dilution factor to recommend:	0.5		0.8306624	
Dilution series to recommend:	100.0	1.00	100.0	1.00
	50.0	2.00	83.1	1.20
	25.0	4.00	69.0	1.45
	12.5	8.00	57.3	1.74
	6.25	16.00	47.6	2.10
Extra dilutions if needed	3.12	32.05	39.5	2.53
	1.56	64.10	32.9	3.04

Convert LC_{50}'s and NOEC's to Chronic TU's for use in WLA.EXE

Table 3. ACR used: 10

	Enter LC_{50}	TUc	Enter NOEC	TUc
1		NO DATA		NO DATA
2		NO DATA		NO DATA
3		NO DATA		NO DATA
4		NO DATA		NO DATA
5		NO DATA		NO DATA
6		NO DATA		NO DATA
7		NO DATA		NO DATA
8		NO DATA		NO DATA
9		NO DATA		NO DATA
10		NO DATA		NO DATA
11		NO DATA		NO DATA
12		NO DATA		NO DATA
13		NO DATA		NO DATA
14		NO DATA		NO DATA
15		NO DATA		NO DATA
16		NO DATA		NO DATA
17		NO DATA		NO DATA
18		NO DATA		NO DATA
19		NO DATA		NO DATA
20		NO DATA		NO DATA

If WLA.EXE determines that an acute limit is needed, you need to convert the TUc answer you get to TUa and then an LC50, enter it here: NO DATA %LC_{50} NO DATA TUa

Cell: I9
Comment:
This is assuming that the data are Type 2 data (none of the data in the data set are censored - "<" or ">").

Cell: K18
Comment: This is assuming that the data are Type 2 data (none of the data in the data set are censored - "<" or ">").

Cell: J22
Comment: Remember to change the "N" to "Y" if you have ratios entered, otherwise, they won't be used in the calculations.

Cell: C40
Comment:
If you have entered data to calculate an ACR on page 3, and this is still defaulted to "10", make sure you have selected "Y" in cell E21

Cell: C41
Comment: If you have entered data to calculate an effluent specific CV on page 2, and this is still defaulted to "0.6", make sure you have selected "Y" in cell E20

Cell: L48
Comment:
See Row 151 for the appropriate dilution series to use for these NOEC's

Cell: G62
Comment:
Vertebrates are:
Pimephales promelas
Oncorhynchus mykiss
Cyprinodon variegatus

Cell: J62
Comment:
Invertebrates are:
Ceriodaphnia dubia
Mysidopsis bahia

Cell: C117
Comment: Vertebrates are:

Pimephales promelas
Cyprinodon variegatus

Cell: M119
Comment: The ACR has been picked up from cell C34 on Page 1. If you have paired data to calculate an ACR, enter it in the tables to the left, and make sure you have a "Y" in cell E21 on Page 1. Otherwise, the default of 10 will be used to convert your acute data.

Cell: M121
Comment: If you are only concerned with acute data, you can enter it in the NOEC column for conversion and the number calculated will be equivalent to the TUa. The calculation is the same: 100/NOEC = TUc or 100/LC50 = TUa.

Cell: C138
Comment: Invertebrates are:

Ceriodaphnia dubia
Mysidopsis bahia

ATTACHMENT 12

Public Notice – Environmental Permit

PURPOSE OF NOTICE: To seek public comment on a draft permit from the Department of Environmental Quality that will allow the release of treated industrial wastewater and stormwater into a water body in Fairfax and Prince William Counties, Virginia.

PUBLIC COMMENT PERIOD: November 3, 2015, 2015 to December 3, 2015

PERMIT NAME: Virginia Pollutant Discharge Elimination System Permit – Industrial Wastewater and Stormwater issued by DEQ, under the authority of the State Water Control Board

APPLICANT NAME, ADDRESS AND PERMIT NUMBER: Fairfax County Water Authority d/b/a Fairfax Water, 9600 Ox Rd, Lorton, VA 22079, VA0002585

NAME AND ADDRESS OF FACILITY: Griffith Water Treatment Plant, 9600 Ox Rd, Lorton, VA 22079

PROJECT DESCRIPTION: Fairfax Water has applied for a reissuance of a permit for the public Griffith Water Treatment Plant. The applicant proposes to release treated industrial wastewater and stormwater from a water treatment plant at a rate of 5.8 million gallons per day into a water body. The facility proposes to release the treated industrial wastewaters and storm water in the Occoquan Reservoir, the Occoquan River, and unnamed tributaries to the Occoquan River in Fairfax and Prince William Counties in the Potomac watershed. A watershed is the land area drained by a river and its incoming streams. The permit will limit the following pollutants to amounts that protect water quality: pH and Total Suspended Solids. The facility will monitor for Total Nitrogen, Total Phosphorus, Total Kjeldahl Nitrogen, Nitrate+Nitrite, Whole Effluent Toxicity, Dissolved Copper and Total Hardness.

HOW TO COMMENT AND/OR REQUEST A PUBLIC HEARING: DEQ accepts comments and requests for public hearing by hand-delivery, e-mail, fax or postal mail. All comments and requests must be in writing and be received by DEQ during the comment period. Submittals must include the names, mailing addresses and telephone numbers of the commenter/requester and of all persons represented by the commenter/requester. A request for public hearing must also include: 1) The reason why a public hearing is requested. 2) A brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit. 3) Specific references, where possible, to terms and conditions of the permit with suggested revisions. A public hearing may be held, including another comment period, if public response is significant, based on individual requests for a public hearing, and there are substantial, disputed issues relevant to the permit.

CONTACT FOR PUBLIC COMMENTS, DOCUMENT REQUESTS AND ADDITIONAL INFORMATION: The public may review the draft permit and application at the DEQ-Northern Regional Office by appointment, or may request electronic copies of the draft permit and fact sheet.
Name: Alison Thompson
Address: DEQ-Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193
Phone: (703) 583-3834 E-mail: alison.thompson@deq.virginia.gov Fax: (703) 583-3821